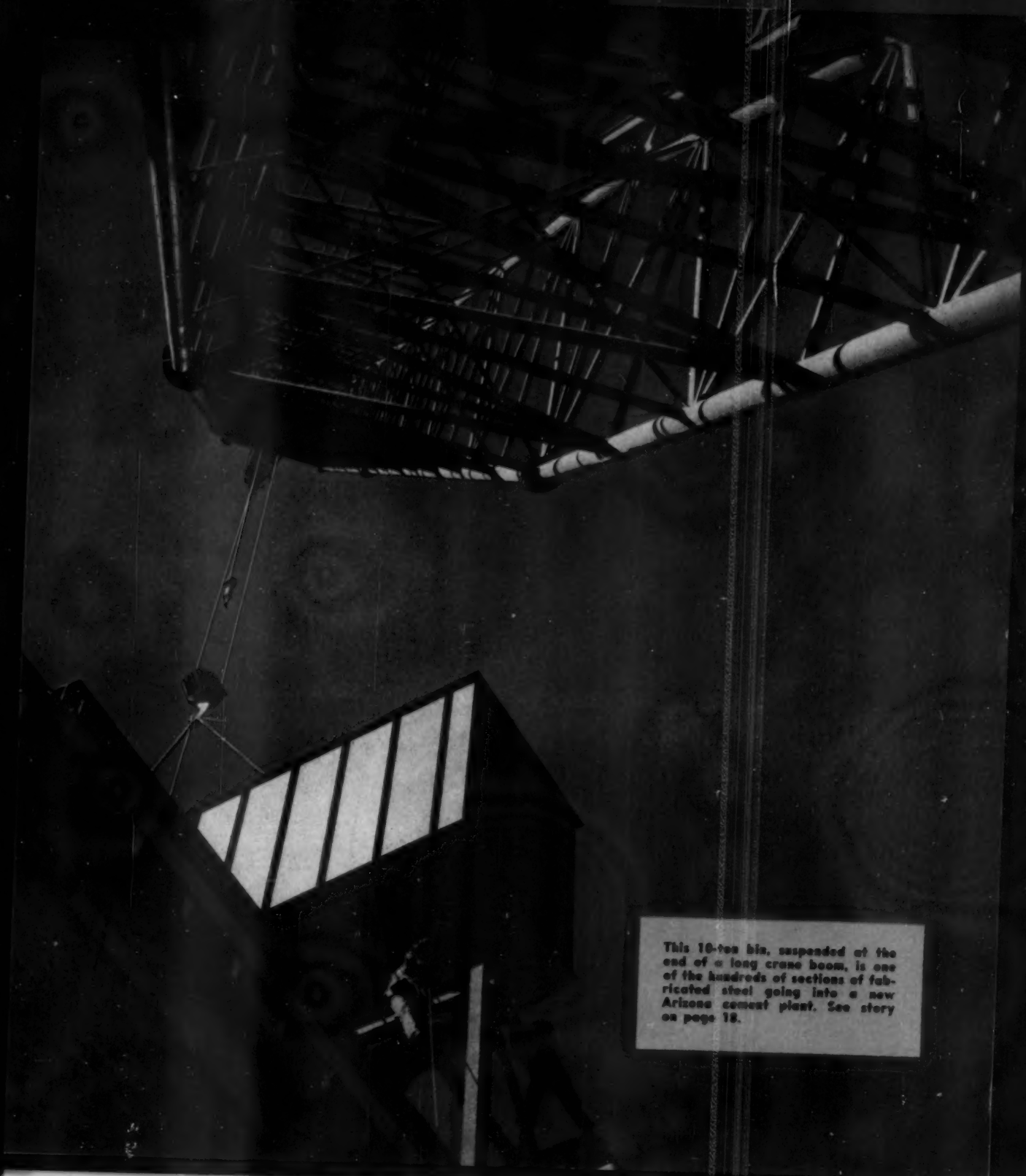
Excavating Engineer

founded 1905

SEPTEMBER 1959



This 10-ton bin, suspended at the end of a long crane boom, is one of the hundreds of sections of fabricated steel going into a new Arizona cement plant. See story on page 18.

"when I grow up I'm going to run one of those"

When a fellow daydreams out loud to his best girl, he dreams *big*. Running a big Bucyrus-Erie electric shovel means he's really arrived!

Many a mine or quarry owner who's now "arrived" got his start years ago with Bucyrus-Erie electrics.

That's why two out of every three shovels on the great iron ranges of northern Minnesota and upper Michigan are Bucyrus-Eries. It's also why B-E machines have long been *the standard* in large quarries, in open pit mines, and on the biggest dam and construction projects all over the world. *Wherever important jobs require the best equipment* — that's where you'll see Bucyrus-Erie.

BUCYRUS ERIE®

Here's a demonstration right on this page!

AT THE DRAGLINE, the Cat DW20-PW20 Unit was confined to turning around in a 40-50 foot wide space. Despite the big size of the unit, it was able to make nonstop turns—a great advantage working in close quarters. The wide target of the PW20 helped decrease load time and increase payload.

HAULING, the Cat-built Engine combined with the 10-speed transmission of the DW20 enabled the big rig, with big loads, to negotiate soft haul road conditions for fast cycle times trip after trip. The Caterpillar DW20-PW20 unit's wide base tires provided excellent flotation both on the haul road and at the dumping area.

DUMPING, the PW20's steep sides (18 in. from vertical) and rear door enabled it to shed the sticky material with dispatch. The DW20-PW20 walked away from its load with minimum or no lost time. Use of high-tensile steel in the PW20's construction enabled it to handle heavy payloads.

Get the low-down on the new Cat DW20-PW20 Unit from this time and cost study

THE JOB: Simms Bayou Improvement, Houston, Texas. *Date*—March 13, 1959. *Contractor*—Lee and McKnight Contracting Co., Houston.

JOB CONDITIONS: *Material*—black gumbo and blue clay. *Density*—3000 lb./yard. *Haul length*—3,420 ft. (one way). *Grades*—none (two 90° turns). *Haul road conditions*—first 400 ft. with 300 lb./ton rolling resistance. Balance of haul road maintained—rolling resistance 150 lb./ton. *Loaded by*—dragline with 3 cu. yd. bucket.

AVERAGE LOAD TIME	3.44 min.
AVERAGE HAUL, DUMP AND RETURN TIME	7.17 min.
AVERAGE CYCLE TIME	10.61 min.
AVERAGE PAYLOAD (LB.)	78,633
AVERAGE PAYLOAD IN BANK YARDS AT 3000 LB./YD.	26.31
PRODUCTION ON A 60-MINUTE HOUR	
Trips/hour	5.65
Cu. yd./hour	148.65
OWNING AND OPERATING COST PER YARD	11.85¢
PRODUCTION AT 75% EFFICIENCY	
Cu. yd./hour	111.5
Cost/cu. yd.	15.8¢

The demonstration described and pictured here was made in comparison with competitive units. The new Cat DW20 Series G Tractor with new Athey PW20 Bottom Dump Trailer came through with high production at *lowest cost per yard.* As a result, the contractor purchased a DW20-PW20 Unit.

Consider the facts about this high-capacity rig. The DW20 Series G has a rating of 345 HP (maximum output). It hits top speeds of 35.8 MPH quickly for cutting cycle times. It provides maximum rimpull of 39,565 lb. for unmatched performance on adverse grades. The PW20, constructed of extra strength steel, has a struck capacity of 27 cu. yd.—and a maximum carrying capacity of 40 tons. Here's a matched pair designed to handle *more* work *faster* at *lower* cost per yard than ever.

For the complete time and cost study of this job, see your Caterpillar Dealer. Ask for a demonstration, too. That's the best way to judge what the big new DW20-PW20 can do on your job. Name the place and date—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS

125 TONS at 17′ radius
Greatest lift capacity on crawlers

NEW MANITOWOC model 4000 crane

Another first from Manitowoc — the world's only crawler crane with a huge 125 ton lifting capacity! Here's power to make the heaviest lifts with ease — stability to poke booms way up. ■ Look under the powerful new Manitowoc 4000 and you'll find a heavy, massive rotating base with huge hook and house rollers for fast, smooth swings carrying the heaviest loads. The big, stable undercarriage and long, wide-spread crawlers provide a solid lifting foundation. ■ Look *inside* the Model 4000 and you'll find the big, double drum boom hoist that powers loads up *and* down. Boom hoist is self-locking worm gear type that cannot "free wheel". On the rugged main drum the job-proved external brake and internal clutch friction arrangement assure positive control when placing heavy iron sky high. Extra-friction surface, disc-type swingers provide instant response to the operator's touch. Both manual or full air controls are available. ■ To meet any lifting requirement, there is a full range of boom lengths and jibs. The basic boom supplied with the rig is a new Manitowoc "T" section boom 70′ long, available with inserts of 10′, 20′ and 30′. For those really high, lightweight lift jobs, extra long booms and jibs in the 300′ range provide real "sky hook" reach. ■ You'll want more information on the new Model 4000. Get it now from your Manitowoc distributor, or write to the Manitowoc Engineering Corp., Manitowoc, Wisconsin.

Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 125 TON	1¼-YD. - 5½-YD.	1¼-YD. - 6-YD.	1¼-YD. - 3-YD.

Advertisers
IN THIS ISSUE

Allis-Chalmers ..... 40–41, 4th Cover
American Steel & Wire Div., U. S. Steel Corp. 53
Bethlehem Steel Co. 32
Bucyrus-Erie Co. ..... 2nd Cover, 6, 10–11, 17, 45, 50, 61
Caterpillar Tractor Co. 1, 9, 54, 55, 59
Colorado Fuel & Iron Corp. 57
Columbia-Geneva Steel Div., U. S. Steel Corp. 53
Curtiss-Wright Corp., South Bend Div. 4–5
Drake-Williams Mount 52
Eimco Corp., The 49
Electric Steel Foundry Co. 33, 34
Euclid Div., General Motors Corp. 47
For Sale (Classified) 63, 64–65, 66
General Motors Corp., Euclid Div. 47
Hammerblow Wire Rope Cutter Co. 60
H & L Tooth Co. ..... 3rd Cover
Hendrix Mfg. Co. 8
Hough Co., The Frank G. 7
Ingersoll-Rand Co. 62
Macwhyte Co. 23
Manitowoc Engineering Corp. 2
Roebling's Sons Corp., John A. 57
Sauerman Bros., Inc. 43
South Bend Div., Curtiss-Wright Corp. 4–5
Tennessee Coal & Iron Div., U. S. Steel Corp. 53
United States Steel Corp. 53
United States Steel Export Co. 53
Williams Bucket Div., Wellman Engineering Co. 37

Excavating Engineer

founded 1905

South Milwaukee, Wisconsin

CONTENTS

Volume 53 No. 9 **September 1959**

Rebuilt Bayou to Handle Houston's Torrential Rains 12
Flood control project on Brays Bayou will protect exclusive residential and business area in Texas' largest city. Stream is being straightened, enlarged and lined with concrete.

New Cement Plant for Arizona—by Ray Day 18
Cement requirements of Glen Canyon Dam will take most of the output for several years of big facility in north-central Arizona. Plant erection is rush job for Fisher Contracting Co.

Porter-DeWitt Helps Build Interstate 44—by L. H. Houck 24
Poplar Bluff (Mo.) firm is ahead of schedule on a 6.9-mile job near St. Louis.

Deepen Great Lakes Connecting Channels 27
Excavation of 66 million yards of earth and rock will provide 27-ft. navigation.

Memphis Unsnarls Traffic Jams 35
Overcrowded streets bring serious traffic congestion problems to Memphis, Tenn. Local contractor specializes to get fair share of $4-million-a-year, long-range improvement program.

Sprinkling System Speeds Sand Excavation—by Floyd Suter Bixby 38
Contractor easily handles hard-to-move dry sand on Texas highway job.

News from the Field 42

AMC to Meet in Denver 42
Rubber Tanks Store Liquids 42
Charles E. Reed Dies 43
Drilling Symposium 43
High-Class Haul Road Serves Phosphorus Mine 44
Oiling, Repairing and Adjusting Cranes ... 44

Equipment You Ought to Know About 45
Ex-Laffs Page 48
Not in the Contract 58
New Trade Literature 60
Notes from the Manufacturers 66

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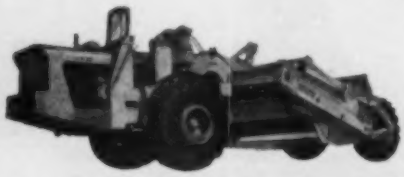
YARDS

ON

MODEL CW-220
20.0 cu. yds. STRUCK
27.0 cu. yds. HEAPED
INTERCHANGEABLE WITH MODEL CWD-221 REAR DUMP UNIT



MODEL CW-215
15.0 cu. yds. STRUCK
21.0 cu. yds. HEAPED
INTERCHANGEABLE WITH MODEL CWD-214 REAR DUMP UNIT

MODEL CW-27
7.0 cu. yds. STRUCK
10.0 cu. yds. HEAPED

MODEL CW-226
26.0 cu. yds. STRUCK
36.0 cu. yds. HEAPED

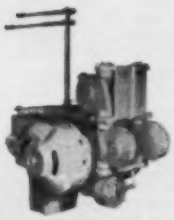
MODEL CW-320
20.0 cu. yds. STRUCK
27.0 cu. yds. HEAPED
INTERCHANGEABLE WITH MODEL CWD-221 REAR DUMP UNIT

MODEL CWD-221
21.0 cu. yds. STRUCK
31.0 cu. yds. HEAPED
35-TON LOAD CAPACITY
INTERCHANGEABLE WITH MODELS:-CW-220

INTERCHANGEABLE WITH MODEL CW-220 SCRAPER UNIT

MODEL CWD-321
21.0 cu. yds. STRUCK
31.0 cu. yds. HEAPED
35-TON LOAD CAPACITY

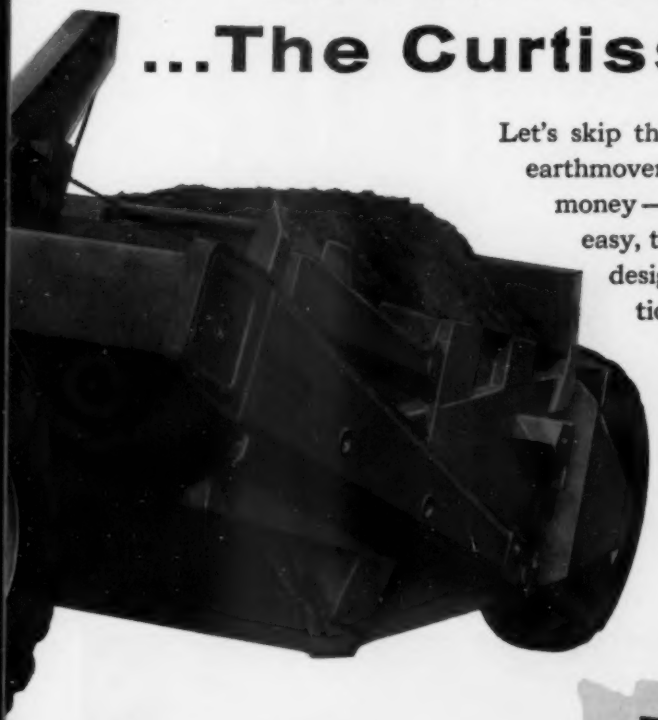
MODEL CWT-20
20.0 cu. yds. STRUCK
27.0 cu. yds. HEAPED



CABLE CONTROLS
for standard tractors in every horsepower range

AHEAD

ANY EARTHMOVING JOB ...The Curtiss-Wright Line



Let's skip the details and get down to basic facts about earthmovers. If you move more dirt, you make more money — it's as simple as that . . . and just about as easy, too, with the modern Curtiss-Wright line. C-W design features for high performance, easy operation and low maintenance put you yards ahead in production — dollars ahead in profit on any earthmoving job. Call your Curtiss-Wright distributor for complete information and specs on the machine performance matched to your job requirements.

Your local Curtiss-Wright distributor is part of a nationwide sales, parts and service network devoted to making Curtiss-Wright users the most satisfied in the industry. You can depend on him for the most efficient, most cooperative service that it is possible to provide.

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SOUTH BEND DIVISION
CURTISS-WRIGHT CORPORATION
SOUTH BEND, INDIANA

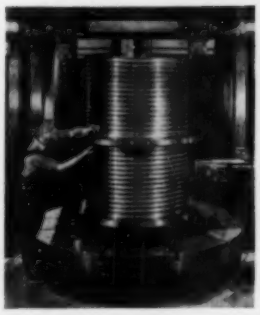
Where your profits are concerned...there is

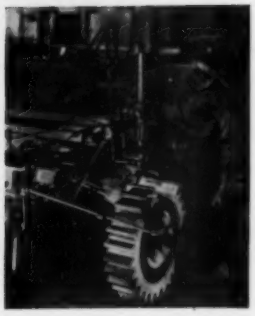
No Second Best Quality!

Bucyrus-Erie is *very* interested in the detailed production records you maintain on the machines in your pits. The reason: Bucyrus-Erie wants to be sure that the parts you buy for your equipment are *more than satisfactory*.

In one of the most extensive laboratories in the Industry, Bucyrus-Erie engineers and technicians constantly check and recheck, test and torture materials used in your machine parts.

That is why BECO PARTS last longer on the job, make the production records of Bucyrus-Erie machines better. We have a big stake in your operations. When you buy parts... buy original equipment BECO PARTS for new machine performance!





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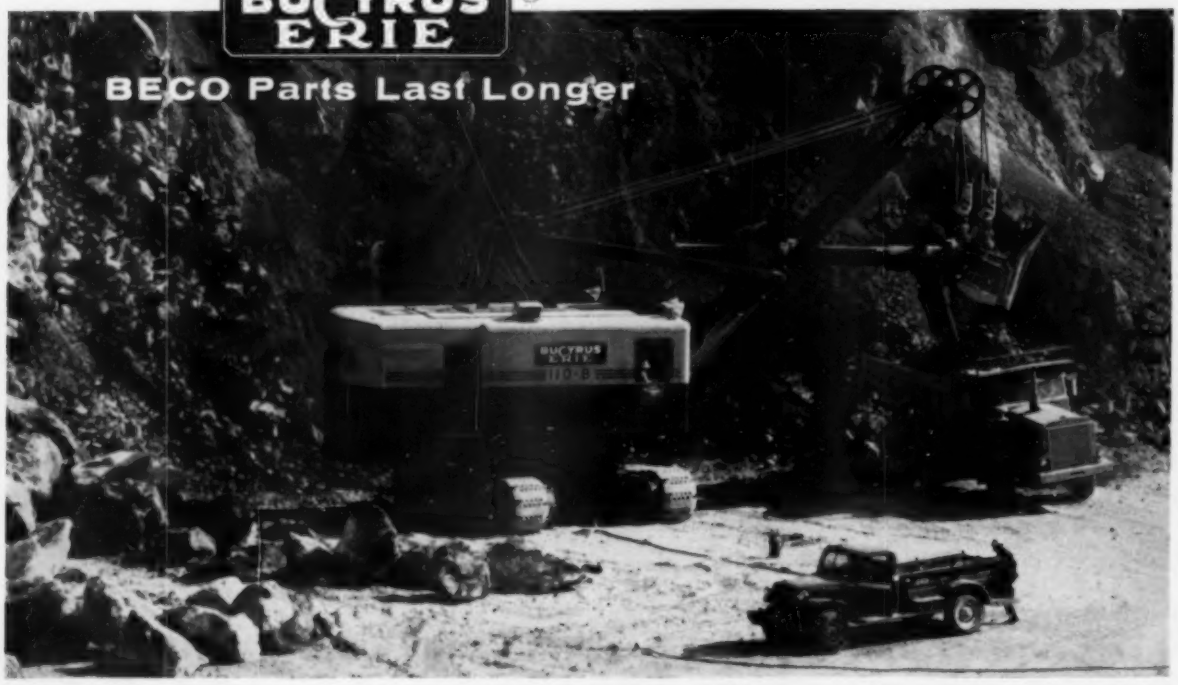

new model H-50 PAYLOADER®

5000 lb. carry capacity... 3/4 to 2 yd. buckets

The model H-50 is the successor to the model HU in the "PAYLOADER" line of 4-wheel-drive tractor-shovels, and is another example of the continual development program that has maintained Hough leadership in tractor-shovel design and performance. It contains a number of improvements that give it outstanding performance for a machine in this size range.

BALANCED DESIGN Hough "balanced-design" provides correct weight distribution plus a proper balance between power, drive train components and hydraulic system consistent with the handling of maximum tonnages.

MORE POWER The H-50 gives you a choice of gasoline or diesel engines, and more horsepower in both types — 92 hp gasoline, 90 hp diesel. These bigger engines provide more power for both propulsion and hydraulics without "lugging down".

EASY, FULL-POWER OPERATION Power-shift transmission with three speeds forward and reverse, plus easy power-steer and 4-wheel power brakes assure fast operation with minimum operator effort... promote a high production rate the full shift.

PROTECTED FOR LONG LIFE Sealed front brakes, complete filter protection for engine and hydraulic systems, hypoid differential with power-transfer feature, and planetary final drives are some of the many design details that will assure low maintenance, reliable service and long life.

MORE ATTACHMENTS... MORE USES The widest choice of attachments are available, including these exclusive ones: Drott 4-in-1 bucket, Wain-Roy Backhoe, Vibratory compactor, Ram Black-top spreader ... also blower, "V" and blade plows, angling backfiller, back-rip scarifier, winch and others.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
708 Sunnyside Ave., Libertyville, Ill.

☐ Send data on H-50 "PAYLOADER".
☐ Other "PAYLOADER" units to 12,000-lb. carry cap.

Name _____
Title _____
Company _____
Street _____
City _____ State _____

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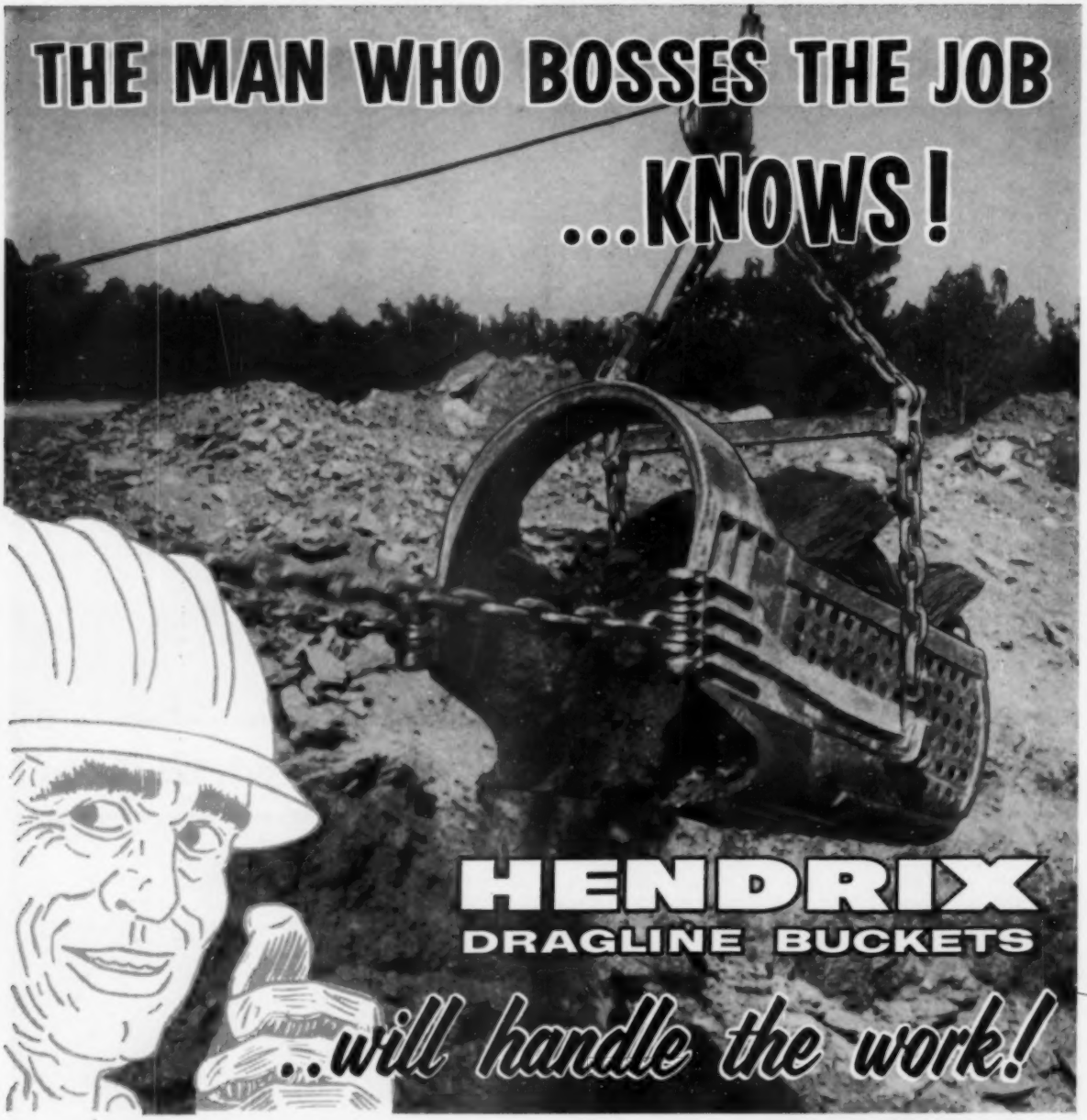
THE MAN WHO BOSSES THE JOB ...KNOWS!



HENDRIX DRAGLINE BUCKETS

...will handle the work!

Fill Faster

Handle Easier

Dump Cleaner

"A Type for Every Digging Purpose"

¼ to 40 Cubic Yards

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

Hendrix Lightweight DRAGLINE BUCKETS

Cat DW21-PR21 units handle rock "on the double" on U. S. 10, Montana

When Albert Lalonde Company, Sydney, Montana, was awarded a $1,537,337 contract on a four-mile section of U. S. 10 on the Interstate System, three Cat DW21 Tractors with Athey PR21 Rear Dump Wagons were purchased for hauling the rock. A. M. Stolzenburg, Superintendent, tells why: "We ran three seasons with them in rock jobs. Now that we're back in rock again, we bought some more. They're big, rugged and an easy shovel target, have a low center of gravity and are maneuverable."

Note how these features met the conditions on this job. The units had to work in limited room on benches and steep haul roads. Material handled for fill included shot rock and sandstone. On haul lengths averaging 300 yards, the units handled 275 cu. yd. an hour. At the start of the job, they worked 8 hours a day; to finish it, 16 hours a day.

New DW21 Series G now 345 HP

Now a new DW21 Series G is matched to the 22.5 cu. yd. PR21 for even faster production on the toughest jobs. Compared with the model it replaced, it has new HP—345 (maximum output) for an increase of 8%. It also has 12% higher rimpull. This increased rimpull provides up to 20% faster travel speeds under similar haul road conditions. Equally important, the horsepower increase was achieved without any sacrifice whatsoever in the excellent torque characteristics of the Cat Super-Turbo Engine.

Get the complete facts on the Cat DW21-PR21 from your Caterpillar Dealer. Ask for a demonstration. Pick a tough job—see for yourself how this giant handles the hard work!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS

LOAD FAST! PR21 offers a big target. Short non-stop turns of DW21-PR21 unit speed spotting under shovel and work on a narrow bench. PR21's special steel withstands impact, abrasion and corrosion.

ROLL FAST! Two of three DW21-PR21 units on the job. DW21 combines high travel speed with excellent torque characteristics. The PR21 has a 22.5 cu. yd. heaped and 62,000 lb. capacity. All this adds up to fast cycles, top production.

DUMP FAST! PR21 has hydraulic hoists for quick and complete dumping of any material. DW21's hydraulic steering facilitates maneuvering. Wide-section, tubeless tires provide maximum flotation and sure traction.

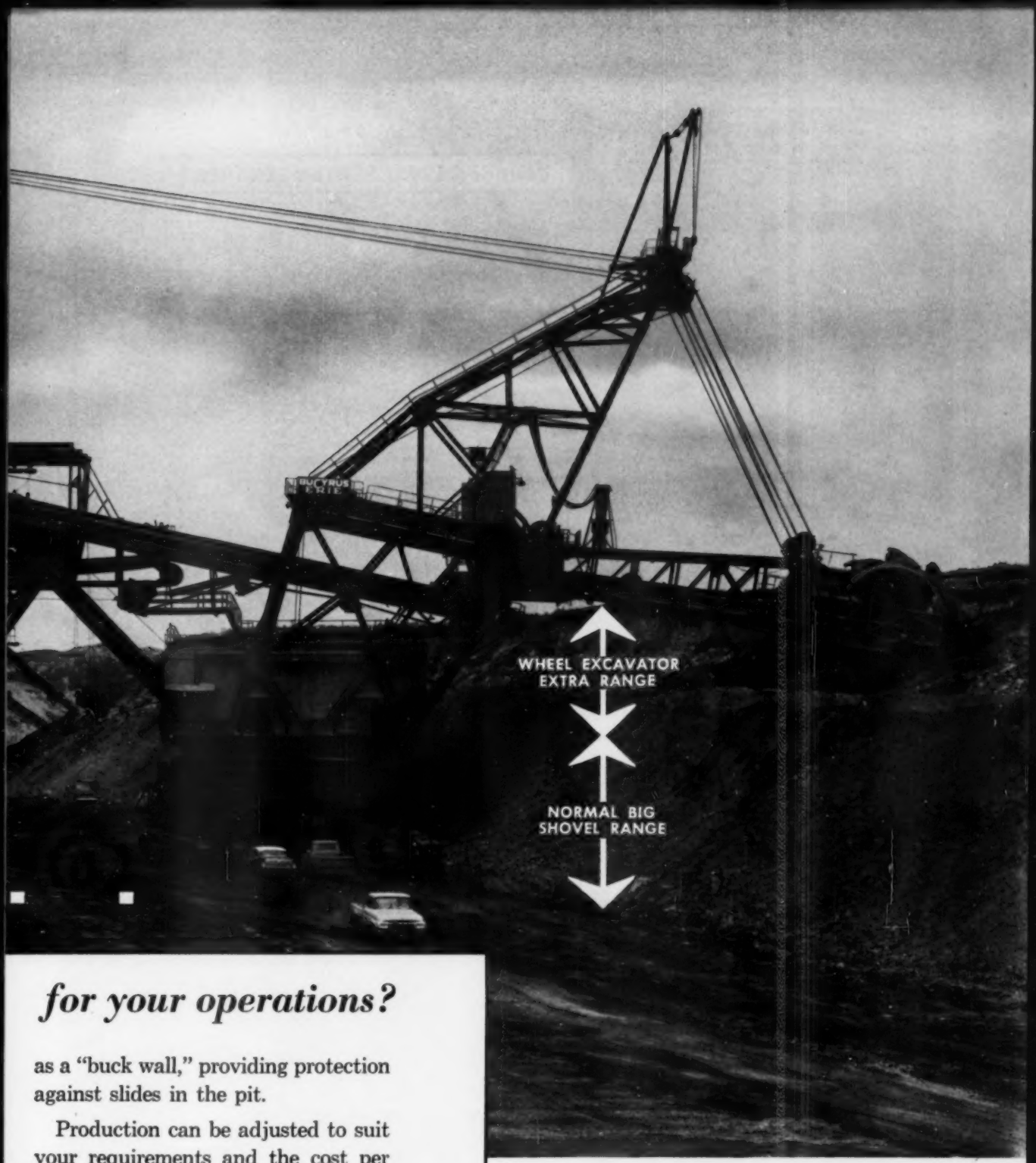
MEET THE WHEEL EXCAVATOR .

. . . have you considered this revolutionary machine

Take a close look at the unique abilities of the Bucyrus-Erie wheel excavator. Perhaps it is the answer to your large-scale excavating, stripping and high-volume dirt-moving problems.

In the coal fields for example, Bucyrus-Erie wheel excavators team up with present big shovels and make it possible to uncover veins previously too deep for practical stripping . . . thereby increasing strippable reserves and extending the use of present equipment.

The "wheel" can deposit the unstable material, normally occurring near the top of a mine cut bank, far back onto the spoil pile. The stripping shovel places the more stable material from the lower part of the bank at the bottom of the spoil pile where it acts



for your operations?

as a "buck wall," providing protection against slides in the pit.

Production can be adjusted to suit your requirements and the cost per cubic yard of material dug is lower than by any other method.

For details on how a wheel excavator may be applied to your operations consult Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept 5LA.

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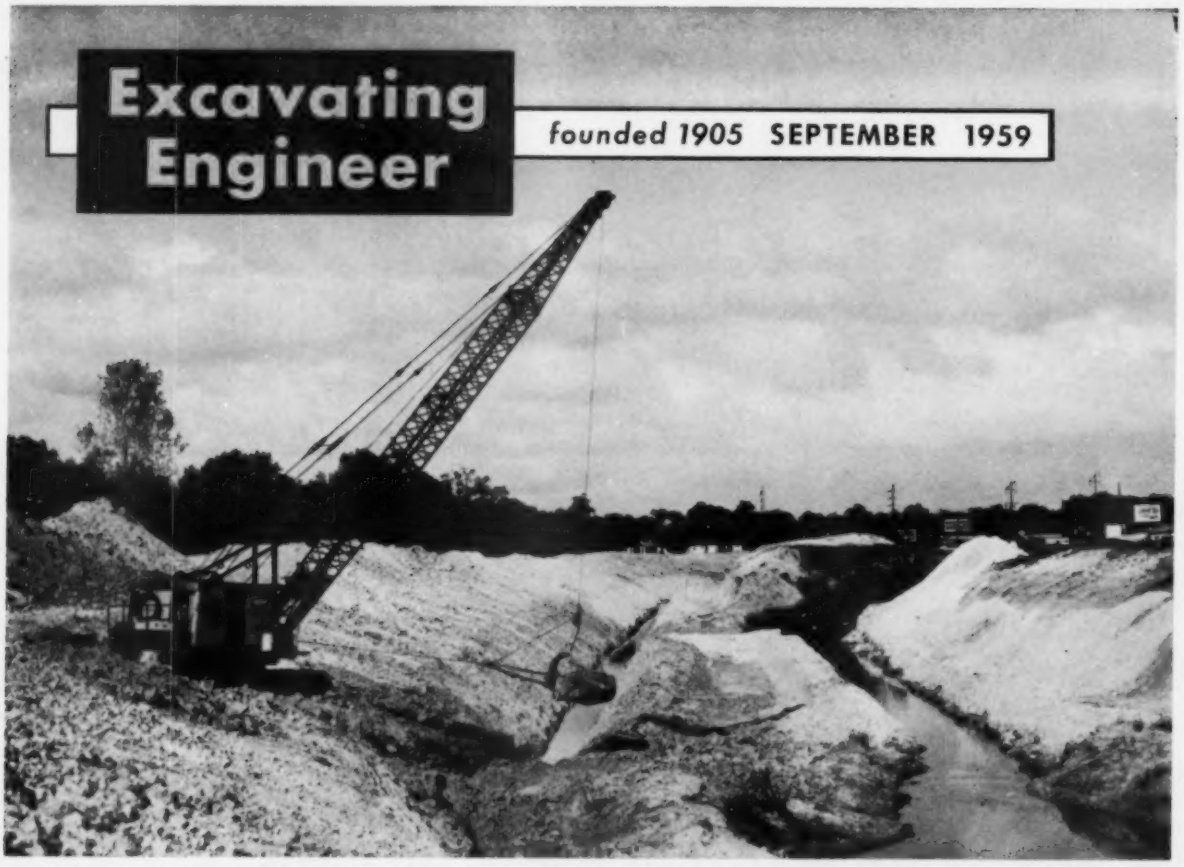
Builds Better Equipment

Excavating Engineer
founded 1905 SEPTEMBER 1959



Temporary ditching of Brays Bayou so that channel work can start is handled by a 38-B carrying a 2-yd. perforated bucket.

Rebuilt Bayou to Handle Houston's Torrential Rains

Flood control project on Brays Bayou will protect exclusive residential and business area in Texas' largest city. Stream is being straightened, enlarged and lined with concrete.

ONLY blocks from the world-famous Shamrock Hilton Hotel in Houston, Tex., Trinity Construction Co. is moving 2,450,000 cubic yards of dirt to prevent the devastation of floods.

The channel of Brays Bayou, a normally peaceful stream which flows through the southwest sector of the largest and fastest growing city in the South, is being improved by the Houston construction firm under a $3,191,254 contract from the Galveston district of the U.S. Army Corps of Engineers. The job includes widening the stream channel to an average width of 210 feet, making the channel an average 31 feet deep and paving the stream bed.

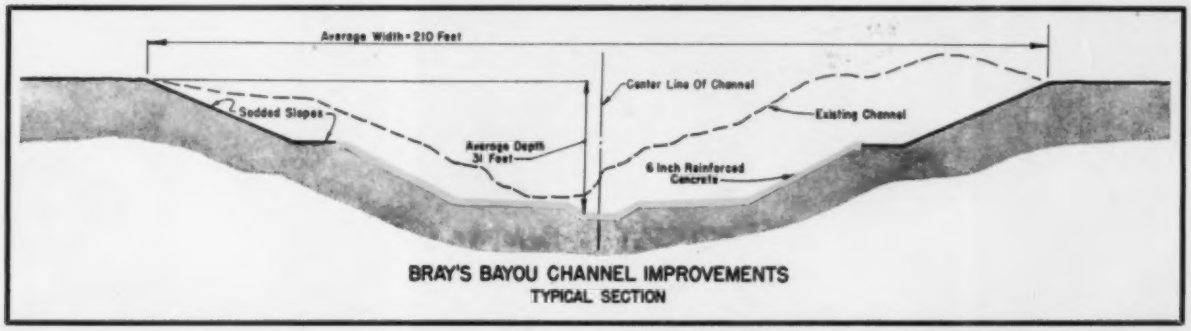
Six-Mile Job

Trinity's job is almost six miles long. Divided into two sections, the present contract calls for channel rectification of Brays Bayou from Braeburn Boulevard to Chimney Rock Road, and from Old Main Street to Almeda Road.

Besides the 2½ million yards of common excavation, other major items include 38,740 cubic yards of class A concrete; 52,250 barrels of cement; 2,705,000 pounds of reinforcing steel; and 198,650 square yards of sand filter blanket 6 inches deep.

The stream has rampaged out of its banks four times in the last 20 years with devastating results. Houston's residential and commercial building boom in recent years has increased land values tremendously along the stream. The present channel improvement is a race against time—the time when a "once in 50 years" rainstorm again strikes.

Houston is located in an area subject to all the meteorological conditions that make large storms possible. A rainfall of over 20 inches in a 30-hour period was recorded in the city as recently as 1945. During this storm hundreds of Houston and suburban Bellaire homes were flooded, and the residents took to boats when Brays Bayou went on a rampage. Earlier floods were those of 1935 and 1929, when floodwaters



This is how the channel will look when rectification program is completed. Solid color line shows concrete. Slopes will be sodded.

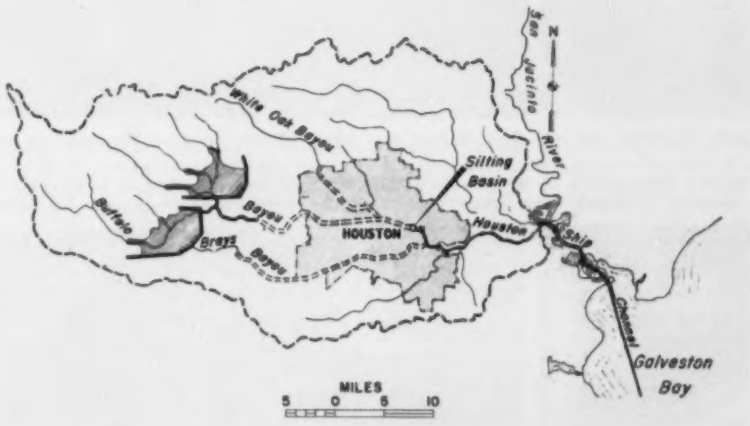
turned many a city street into flowing rivers.

The urban residential area which could be inundated by a flooding of Brays Bayou was estimated in 1956 by the Corps of Engineers to have a value of $40 million. Local sources say that mushrooming residential and commercial building in that area in the last three years have boosted the value to more than $102 million.

Six Caterpillar DW21 tractor-scrapers and one Allis-Chalmers TS-260 are the prime dirtmovers on the channel enlargement phase. Working six 10-hour days a week, the rubber-tired units are moving an average of 5,000 cubic yards each day. Material ranges from heavy clay and muck to pure sand, and has an average weight of 3,000 pounds per cubic yard. Average haul is 4,500 feet and the DW21's are averaging 11-minute cycles. Two Cat D9 tractors are pushloading the tractor-scrapers with an average assist of 57 seconds.

Fill on the channel right-of-way is brought to 90% compaction by the specified number of passes (four to six, depending on the material) with a 60-in. sheepfoot roller pulled by a Cat D8 tractor. The fills are shaped and the haul roads maintained by two No. 12 motor graders. A third No. 12 with Preco automatic blade control is used to finish bank slopes, and do other necessary fine-grading on the job.

Two draglines, a Bucyrus-Erie model



Brays Bayou flows through the southwestern section of Houston. Its channel and those of Buffalo and White Oak bayous are being improved to handle drainage water.

Cat DW21 scrapers, pushloaded by a D9, remove a major portion of the channel excavation while a No. 12 grader shapes slopes.

(Left) Koehring 605 with 2-yd. bucket digs muck. (Right) Held on the slope by cables from a D8, a grader finishes sideslope.

(Below) Finegrading of the stream bottom to form the pilot channel is handled by a Gradall equipped with scoop bucket. Workmen following install paving forms.

54-B carrying a 3½-yd. bucket and powered by a Cat D337 engine, and a model 38-B carrying a 2-yd. bucket and powered by a Cat D342 engine, also are excavating in the channel. They account for an additional 2,500 yards of dirt being moved each day.

Sixteen and 24-ft. well points on two dewatering lines are used in the channel bottom to stabilize the sub-grade because of the high water table.

Disposal of channel spoil is a constant problem, because Brays Bayou flows through a highly developed section of Houston. Trinity Construction Co. hires trucks to haul dirt excavated by the draglines. Selecting disposal sites for channel spoil is the responsibility of Harris County authorities, who have

(Left) In its original condition, stream was subject to erosion. (Right) Area being improved is adjacent to modern, new buildings.

(Above) Temporary ditch cut into the slope bypasses storm sewer water around the job site. It allows the excavation and concreting phases to proceed in the dry.

had some of the dirt delivered to recreational areas to fill low spots.

Right-of-way for the overall 26-mile long Brays Bayou project is furnished by the Harris County Flood Control District. Federal funds, administered by the Corps of Engineers are paying for a large part of the cost of the project. Eventually some $62 million will be spent for a comprehensive county-wide flood control program. The protection plan, of which Brays Bayou is a major part, will cost Harris County $26 million, while the government's share will be an additional $36 million.

Brays Bayou, which has a normal average flow of 25 cubic feet per second but was recorded at 5,590 cfs during the 1945 flood, has been displaced during Trinity's channel improvement work. The draglines dug a temporary diversion ditch along the channel route above the grade normally traveled by the stream. The water is lifted into the ditch and moved along to the downstream end of the project by an 8-in. Gorman Rupp pump, a 6-in. Judd and ten 3 and 4-in. miscellaneous pumps.

Lift Water

When channel paving is completed, the stream flow will be diverted to the new course as the ditch is filled and brought to bank slope. Because the next downstream section beyond Trinity's job has not yet been let and the bottom of the new paved channel will be eight feet below the old channel, a 36-in. Pomona axial flow pump with a 100-cfs capacity has been installed to lift the water and continue it toward the mouth of the stream.

The channel rectification program of Brays Bayou is being carried all the way to the point where the stream empties into Buffalo Bayou, better known as the Houston Ship Channel. The 50-mile long Ship Channel connects the inland port of Houston with the Gulf of Mexico.

The paved channel bottom will be 40 feet wide at the upstream end of Trinity's project and 50 feet at the downstream end. Paved channel sideslopes (2 on 1) will be 23 feet upstream and 30 feet downstream. A 10-ft. sodded berm is atop the paved sideslopes

One of Trinity Construction Co.'s Cat D9 dozers levels out spoil piles along the banks of the bayou to make flat parkway. In background is the Shamrock Hilton Hotel.

(Left) Sand planer riding on paving forms smooths surface for concreting. Heco truck crane is assigned to stockpile sand.

A 54-B crane carrying a 1¾-yd. laydown bucket swings concrete into a specially designed paver. A second paver is used with slip forms to pour shoulders and slopes.

and the sodded bank slope will be 2½ on 1 on the upstream end of the job, and 3 on 1 on the downstream end.

Concrete lining is considered necessary to prevent excessive scouring of the channel bed and slopes.

Frank W. Bellows, president of Trinity, and R. W. McMinn, job superintendent, believe in having inventories of material ready for the job. Evidence of this is a stockpile of reinforcing steel mats for the concrete paved portions of the channel. Fabricated by Trinity personnel, an ample supply of mats is ready when needed. A Northwest model 25 crane lifts the 20 x 50-ft. mats in place.

Ready-mix concrete is delivered to the job, and is poured by a Koehring model 605 crane and the 54-B and 38-B.

In addition to the previously mentioned equipment, Trinity Construction Co. has two Caterpillar D8's, a No. 70 scraper, and an Allis-Chalmers HD-20 working on the project.

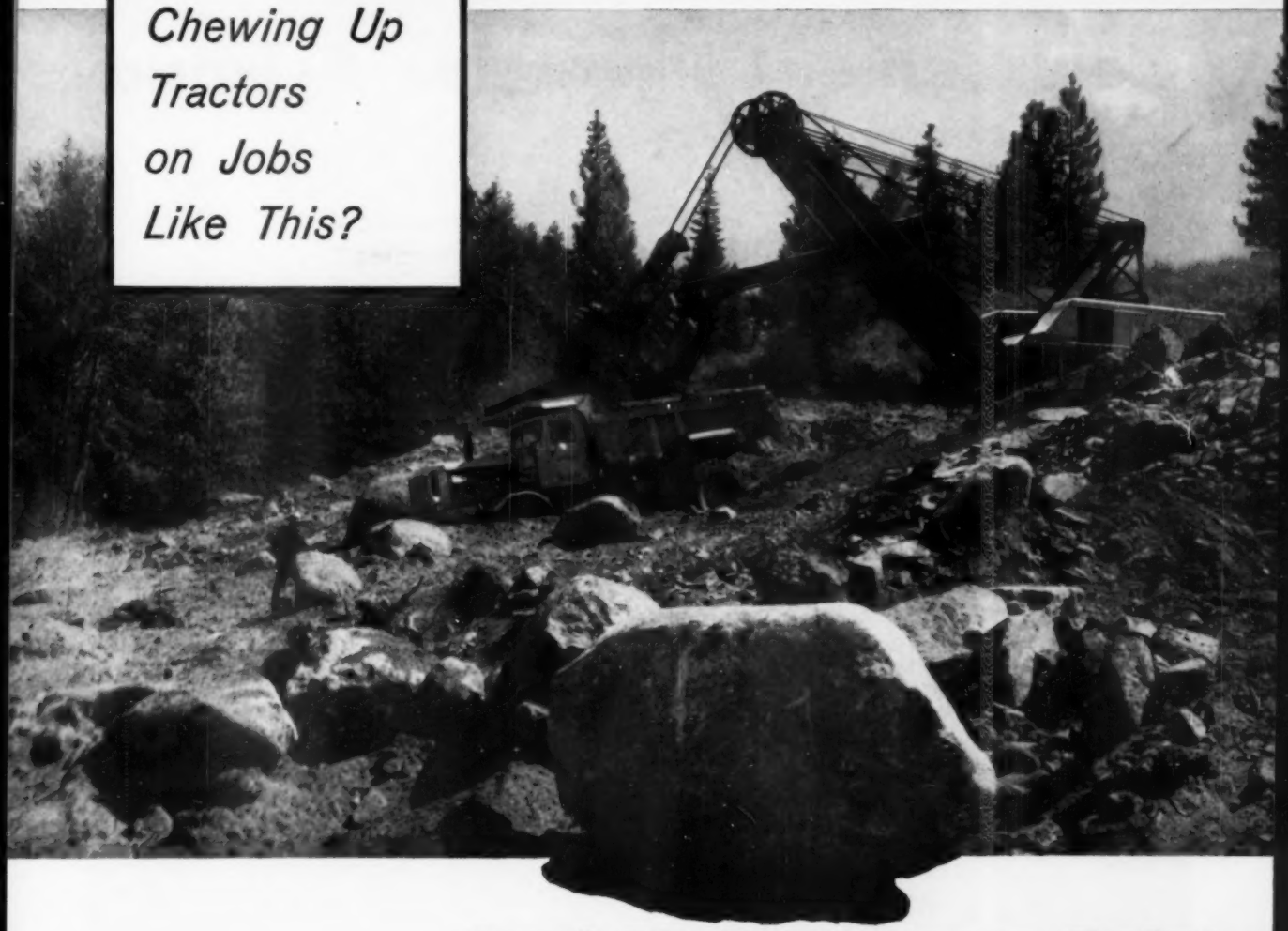
Sixty to 70 men are employed on Trinity's 30,594-ft. two-section project. In addition to Superintendent McMinn, supervisory personnel include J. F. Park, assistant job superintendent; Gene Garrett, concrete superintendent; Dan Lyons, equipment superintendent; Herb Astleford, grade foreman; and Jack Crews, labor foreman.

The project is being constructed under supervision of Col. E. A. Hansen, district engineer at Galveston. Resident engineer on the project is Chester Pawlik. The Corps' chief inspector is Tom Snowden. Other government inspectors on the job are Aubrey Rose, Elton Thomas, Henry Smith and Hilliary Tucker.

The project was begun June 24, 1958, and Trinity's President Frank Bellows says he expects to have the job done by November 30, 1960. The project was 38% complete on August 1.

Trinity Construction Co. is making good job progress under Supt. H. W. McMinn.

Chewing Up Tractors on Jobs Like This?



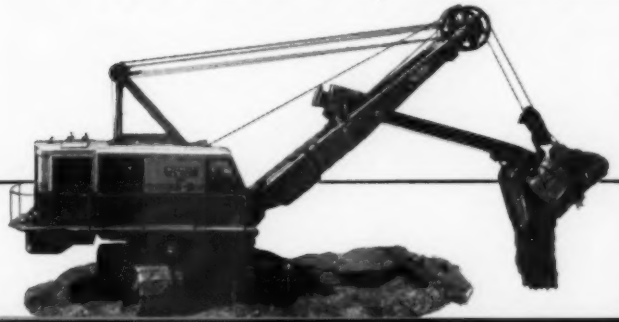
4-yd 88-B Proves a Point on Mountainous Interstate 40

Does a big shovel have a place on today's highway jobs? Wood-Kirst Company made it an emphatic "YES" as its 4-yd Bucyrus-Erie 88-B banged through its 700,000-cu yd share of a 1,200,000-yd job on relocation of U. S. Interstate 40 near California's worst snow zone—mountainous Donner Pass.

Wood-Kirst proved there was no need to tear tractors to pieces with rippers and scrapers in this marginal material . . . by putting the *big* shovel to work. It handled the job faster and more profitably.

Why? Because the 88-B shovel has the best crowd system of any 4-yd rig — twin rope balanced crowd. It gives the operator full control over both crowd *and* hoist at the most critical point in the digging cycle — as the dipper enters the bank. With speed and force automatically proportioned between these two functions, it's no wonder that the 88-B, in straightaway mucking, turned out truckloads of material in four passes, including broken granite where bank toe was exceptionally tight. Assigned to the toughest rock on the project, the 88-B logged over 700 hours worktime with only 5 hours downtime!

PROVE THE POINT TO YOURSELF! We'll be happy to go over the advantages of 88-B operation with you. Write Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept. 20ED.



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New Cement Plant for Arizona

Cement requirements of Glen Canyon Dam will take most of the output for several years of big facility in north-central Arizona. Plant erection is rush job for Fisher Contracting Co.

by Ray Day

IN north-central Arizona, one of the largest untapped sources of materials for cement manufacturing in the United States has finally come into its own. A new, modern 1,800,000-barrel mill, capable of being enlarged four directions to three times that size, is under construction at Clarkdale, close to the old mining town of Jerome. Already the plant has justified the investment faith behind its construction by landing the 3,000,000-barrel U. S. Bureau of Reclamation contract for cement to build Glen Canyon Dam, in northern Arizona. FOB mill price was $2.2321; delivered price was $3.2473. It represents a saving to the federal government of nearly 10% over its estimates, which were based on hauling cement from southern California.

American Cement Corp. is the owner of the new multimillion-dollar facility, which is being built through Phoenix Cement Co., one of its divisions. Fisher Contracting Co., Phoenix, has the construction-engineering-design contract, which has been split to some extent by Fisher for utmost completion speed.

Subcontractors

For example, Fluor Corp., of Los Angeles, Calif., experts in industrial planning, are handling all design. Specialty work tied closely to the job was subbed out to specialty firms. MacDonald Engineering Co. of San Francisco handled slip-form concrete construction on the big 21,000-barrel storage silos; Allison Steel Co., Phoenix; supplied and erected structural steel; Soule Steel Co., Los Angeles, supplied, detailed and installed reinforcing steel; F. L. Smidth & Co. of New York fabricated the two 10x12x350-ft. kilns; General Electric Co. supplied all electric motors including some which had to be designed and manufactured for the first time; and Hewitt-Robins Co. designed and furnished all belt conveyors.

The Clarkdale mill is unique in two respects. From Fisher Contracting Company's point of view, it represents a tricky crane-construction job, lifting heavy weights especially high. From a cement-manufacturing point of view, the new mill will utilize a unique method of storing surge piles of raw materials in piles made up of flat lifts. This is made possible by special traveling stackers. When the storage piles are reclaimed by a traveling rotary reclaimer, there will never be segregation, and a representative flow of materials can be channeled into the mill at all times, thus creating a more uniform product.

The materials deposit at Clarkdale is, with the possible exception of deposits in Pennsylvania's Lehigh Valley, one of the best ever discovered. At least 60% of all limestone materials for the finished cement can be found in the white hills just north of the plant site. There is harder limestone also nearby. Gypsum is in plentiful supply from the

Phoenix Cement's Clarkdale plant, which opens this fall, is spread across the floor of a valley in Arizona's rugged mountains.

Twin-tooth hydraulic ripper mounted on a Cat D9 dozer loosens up rock-filled consolidated material on a building site. In background is concrete batching plant.

Camp Verde area, less than 25 miles away. There are clays and iron ores available locally.

The deposit is so extensive that the late D. S. MacBride, a former president of American Cement Co., remarked in a speech made in Jerome, "The mill will be built on what I believe to be the most extensive deposit of high-grade raw materials ever assembled for the exclusive use of a single cement plant. Even at double the initial annual capacity, the plant will be able to operate for centuries without exhausting its raw material reserves."

Revitalize Towns

Economically, the plant will help to revitalize the Clarkdale-Jerome-Cottonwood mining area, which has been nearly dead for a decade. Mining in the Jerome area has largely been abandoned in favor of more economical open-cut methods in other parts of the state. The Clarkdale community, which sprang up in 1914 to serve the Phelps-Dodge smelter, was hard hit in 1950 when the smelter closed down, and people have steadily moved away. Since the new cement plant is expected to employ from 150 to 200 people on a steady basis, it will help enormously to revive the area's sagging economy.

It has been long known, of course, that the extensive materials deposits existed at Clarkdale. But with transportation costs being what they are, the deposits had to be left untapped until a market big enough and close enough justified construction of the mill. Rapidly-expanding central and northern Arizona, plus the Phoenix area, brought the market potential to a point where construction of the mill was finally justified. And the market was clinched when Glen Canyon Dam was authorized, because that contract alone will practically take care of two years of plant output.

From the very start of construction, it was apparent to Fisher's management that the handling of materials and parts by crane would be one of the most important job considerations to be worked out. Equipment and materials had to be handled, for example, to the top of the secondary crusher and mill buildings, each 90 feet high. Trickiest lift of all was a 17½-ton hopper which had to be raised to the top of the kiln-feed structure, 143 feet high. There was one 65-ton lift to be made in connection with kiln fabrication, and numerous lifts in the 20 to 35-ton range. And some of these lifts were complicated somewhat by having to use relatively low boom angles. There was concrete to be handled by crane; equipment and machinery to set; and structural steel to be erected.

Fisher's management handled the problem by selecting a piece of equip-

Grading of plant site requires 300,000 yards of excavation. This scraper is one of a team of 11 Euclids hauling tough material.

The Plant at a Glance

PRINCIPAL plant components in the Clarkdale cement works include:

1. Raw materials handling and recovery section, where traveling stackers and a traveling rotary reclaimer provide for efficient channeling of limestone.

2. One Allis-Chalmers 48x60 primary jaw crusher; three Allis-Chalmers ball mills; and a Williams im-impact-type secondary crusher.

3. Two Smidth burning kilns, 10x 12x350-ft.

4. Ten storage silos totalling 180,-000 barrels capacity; one homogenizing silo; and two blending silos.

5. Secondary crusher and mill buildings; kiln feed structure; warehouse; and administrative offices.

ment big and powerful enough to make these lifts. It was a Bucyrus-Erie 71-B crane. Because it was necessary on the extreme high lifts to have 160 feet of boom plus a 30-ft. jib, the machine came equipped with a specially-fabricated tubular chord-angle pipe boom, to develop maximum reach with low unit weight. The 71-B also came equipped with a special 25-ton counterweight, a General Motors diesel engine power unit, and manual brakes which gave the operator excellent "load feel." The manual brakes were of course supplemented by boom-up or boom-down under power, and dead man controls which automatically lock a load safely in case brake pressure should suddenly be released all the way.

Large Site

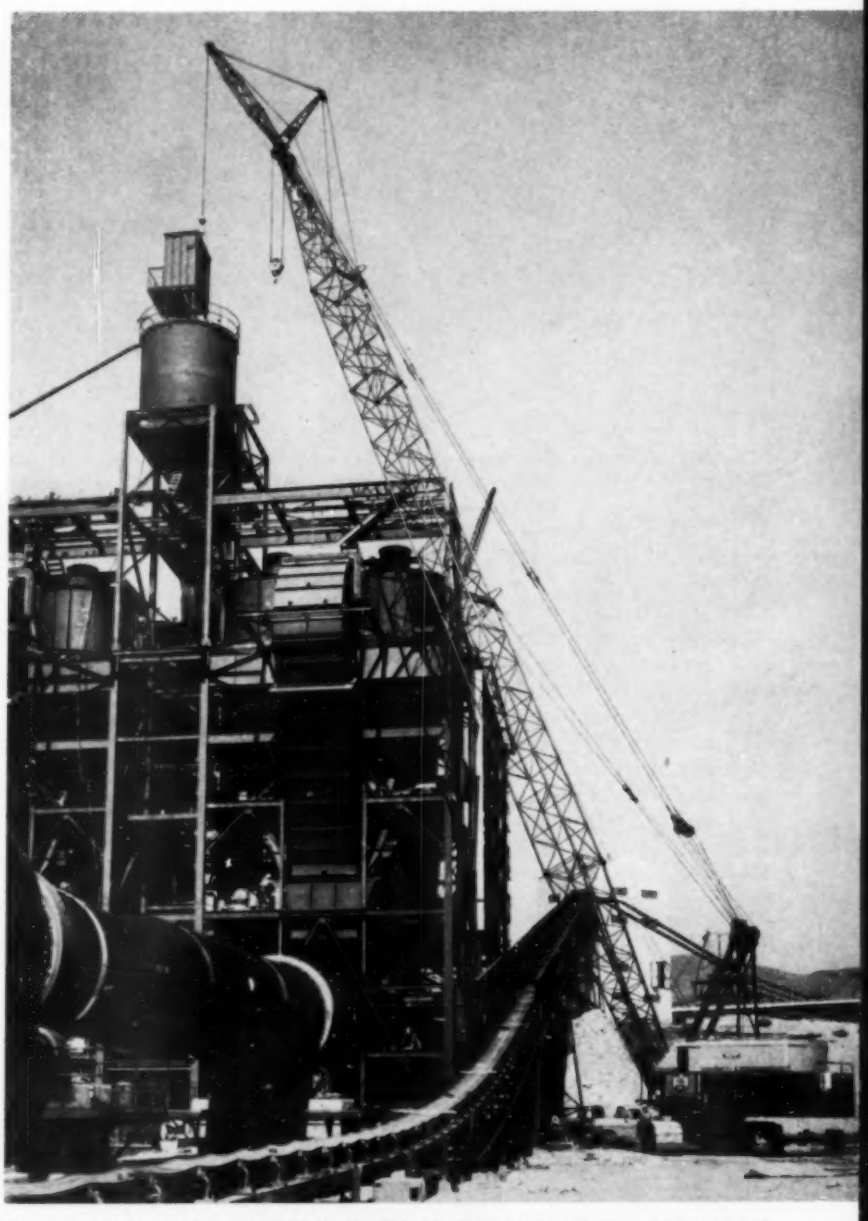
Chronologically, the work has been handled in the following way:

Grading and excavation of the plant site was a sizable item, chiefly because a large site had to be prepared adequately to take care of drainage, access and, to a certain extent, future plant expansion. About 300,000 cubic yards of material had to be moved, including some rock formations which required minor drilling and shooting. But even in the drill-shoot area, actual hauling and loading was properly a job for scrapers.

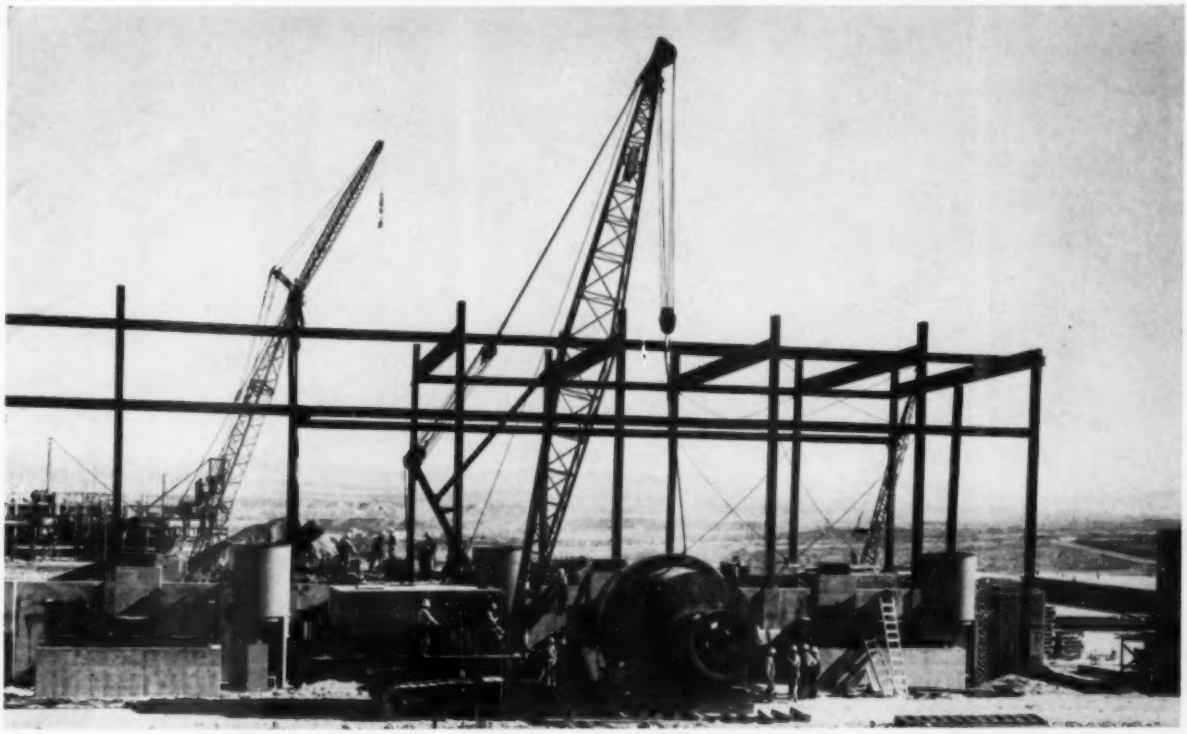
In July 1958, Fisher brought in a peak force of 11 Euclid 18-yd. scrapers, boosted by Caterpillar D8's and D9's and Allis-Chalmers HD-21's and one HD-20. The double pusher method of loading was used generally, short-hauling the material as much as possible between cut and fill areas. Fills under building sites were highly compacted, using tank-truck sprinklers and sheepsfoot rollers. Drilling was handled by three Gardner-Denver Air Trac machines, which put down 3½-in. holes. Timken bits were used for this, on Gardner-Denver series 600 steel. The drilling was not particularly abrasive, so bit sharpening was no problem. Apache bag powder was used for breaking up the rock formations, on a blasting ratio of ¼ of a pound of powder per cubic yard.

Construction of the storage silos represented the heaviest concrete work. The 70x160 silo foundation slab, 5 feet thick, contained 2,000 cubic yards, and there were 3,250 cubic yards in the 10-silo storage bank. Homogenizing and blending silos and other appurtenances added still another 2,000 cubic yards of concrete.

The big foundation slab was built in the late fall of 1958, using concrete materials made locally. Sand and gravel for these mixes were produced by portable crushing and screening machinery



Carrying 160 feet of boom and 30-ft. jib, Fisher's 71-B crane swings a steel compartment into position at the top of the kiln building. Boom is of special tubular design.



Fisher Contracting's 71-B crane, carrying a 60-ft. boom and rigged with six-part hoist tackle, lifts a 40-ton kiln part into position.

set up in the bed of a wash about 2½ miles from the job site. Bulk cement was trucked in from the Oro Grande (Calif.) plant of Riverside Cement Co. Truck mixers and a small Noble batch plant at the job site were used to proportion the materials accurately, and to mix them on the way to the placing site.

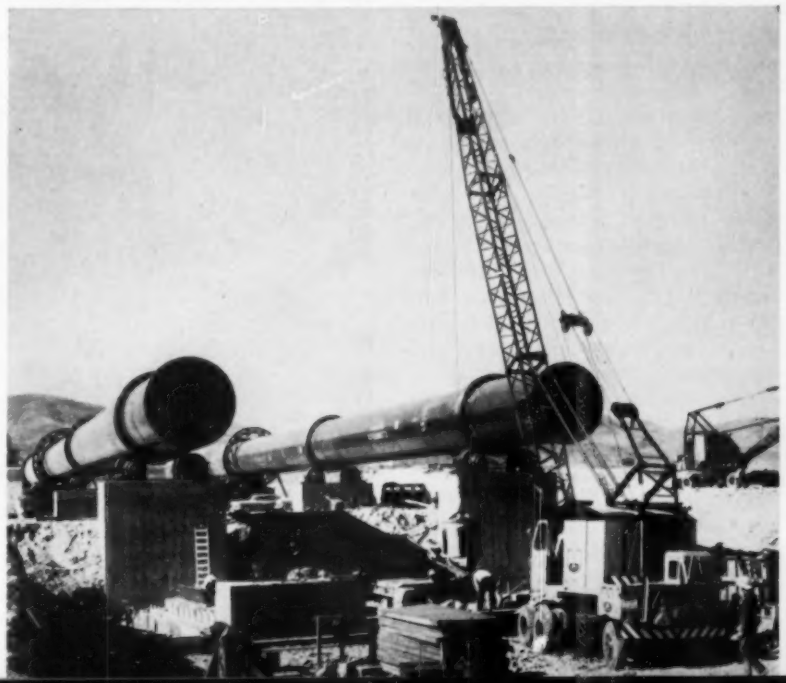
The 2,000-yd. slab pour was made in less than two days. In connection with this pour, the new 71-B crane handled an unusual problem in reach, stretching out 150 feet with a low 25° boom angle to place concrete in a far corner with a ¾-yd. Gar-Bro bucket.

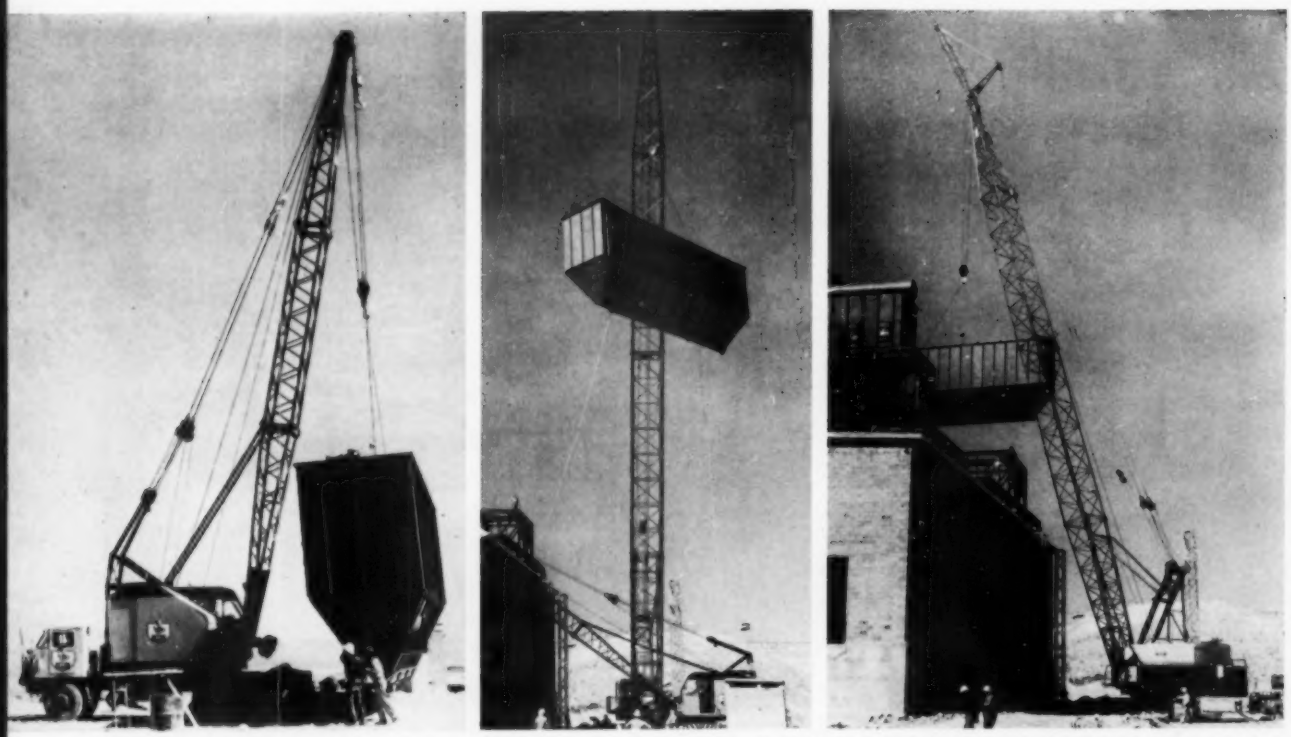
The main 10-silo bank was then erected between December 8 and 15, 1958, using the slip form method of construction. MacDonald Engineering Co., handling this part of the job, used conventional slip forms, jacking rods and hydraulic leveling methods. Fresh concrete was hoisted by tower to be placed into the top of the forms; then as they were raised very slowly, never more than a foot per hour, the concrete was allowed to set up. By the time the lower end of the slip forms had cleared, the concrete was set up so that it would sustain its weight and that of new concrete being poured above that point.

Crane installation of mill equipment was perhaps the most spectacular part of construction. A 65-ton lift of kiln parts, for example, was made by the Bucyrus-Erie 71-B and a Lorain 35-ton MotoCrane working together to hoist the drum in position. Other lifts of bins, structural steel, motors and other equipment were also real displays of power and stability.

Concrete in 1¾-yd. transfer buckets, was regularly handled by the 30-ft. jib on the 71-B's boom, and lifts up to 8 tons were safely made, going above the rated capacity of the boom jib. The machine was stable when making lifts of bins and the other large equipment which caught considerable wind. A 10-ton bin lift was successfully made on 140 feet of boom one morning when the wind was fairly brisk, despite the

Truck-mixed concrete is placed in the footings of one of the kiln buildings by a Link-Belt Speeder crane, using a ¾-yd. Gar-Bro transfer bucket. Kilns are 350 feet long.





(Left) Truck crane brings up a 10-ton bin. (Center) Up she goes. The 71-B lifts bin high before swinging it into place (right).

fact that the crane was working on a slope and a few sharp rocks stuck up through the earth padding under the tracks. But vibration was not dangerous as the machine traveled with its load, and the lift was made without incident.

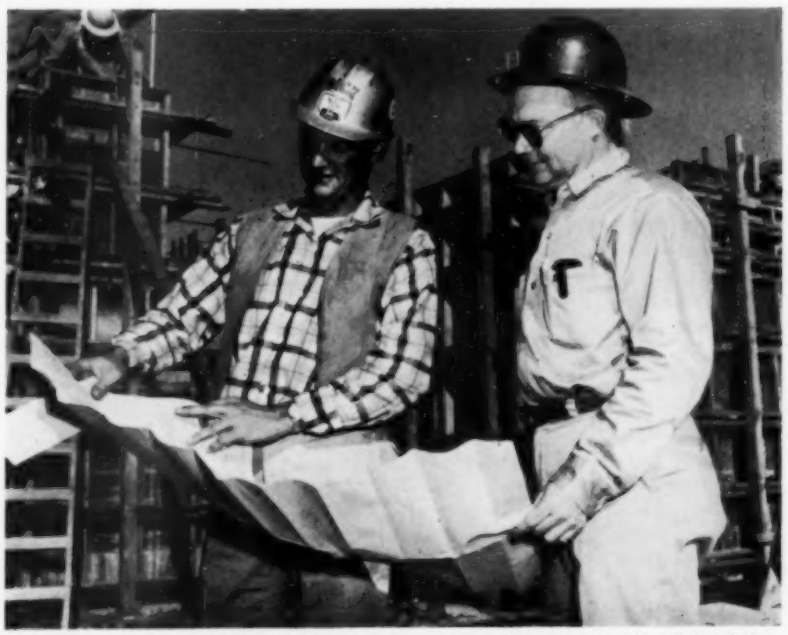
Fisher's general safety program on this project reflects company policy in that regard, and results have been good. There was one 243-day stretch without a lost time accident. Severity rates have been low, too.

Through Jack R. Duncan and Ray Wells of the Fisher organization, a comprehensive safety program is being followed. Meetings are held regularly every other week, and a safety expert spends at least three days on the job every other week working out preventive measures for accident prevention. Since crane work is particularly tricky, periodic inspections and checks are made of the wire rope slings used on the lifts; riggers also are careful to make every lift as safe as possible. The 71-B boom has an anti-kickback device, and with the additional counterweight is safe.

Completion of the plant facilities is slated for this month, when the first cement for Glen Canyon Dam will be turned out.

Field operations for Fisher Contracting Co. are under the general supervision of W. R. Heinke, project manager. His assistants include C. R. Kramer, project superintendent; Andy Anderson, project engineer; Clyde Minard, office manager; and Gus Zarka, master mechanic.

Key personnel for Phoenix Cement Co. are Ray Adams, president; Frank N. Steadman, vice president; W. A. Warriner, assistant to the vice president; Jack Van Meter, construction engineer; and Charles W. Fox, project engineer.



Dick Heinke (left), project manager of Fisher Contracting Co., and Jack Van Meter, Phoenix Cement's project manager, check drawings for structures in background.

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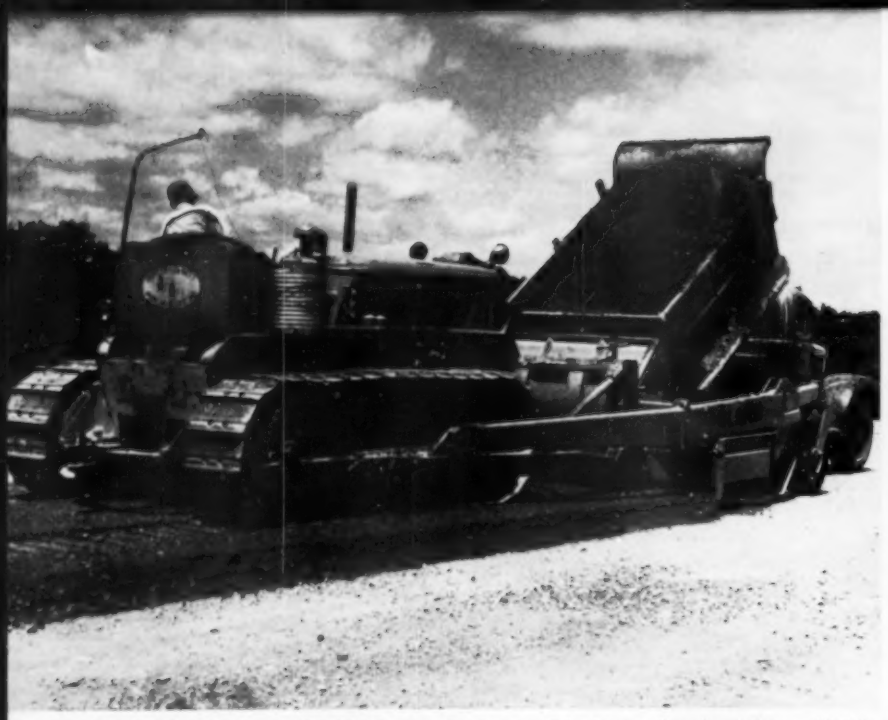


(Left) Cat D7 dozer with Ulrich spreader lays an 8-in. layer of rock sub-base which is compacted by a Bros Econ-o-pactor (right).

Porter-DeWitt Helps Build Interstate 44

Poplar Bluff (Mo.) firm is ahead of schedule on a 6.9-mile job near St. Louis.

by L. H. Houck

THE nation's bread basket—the Middle West—is making something besides bread these days. Illinois, Kentucky, Missouri and Ohio have completed or put under contract more than 12,000 miles of roadway and 3,409 bridges at a cost of almost $2 billion since the 1956 federal aid highway act was passed.

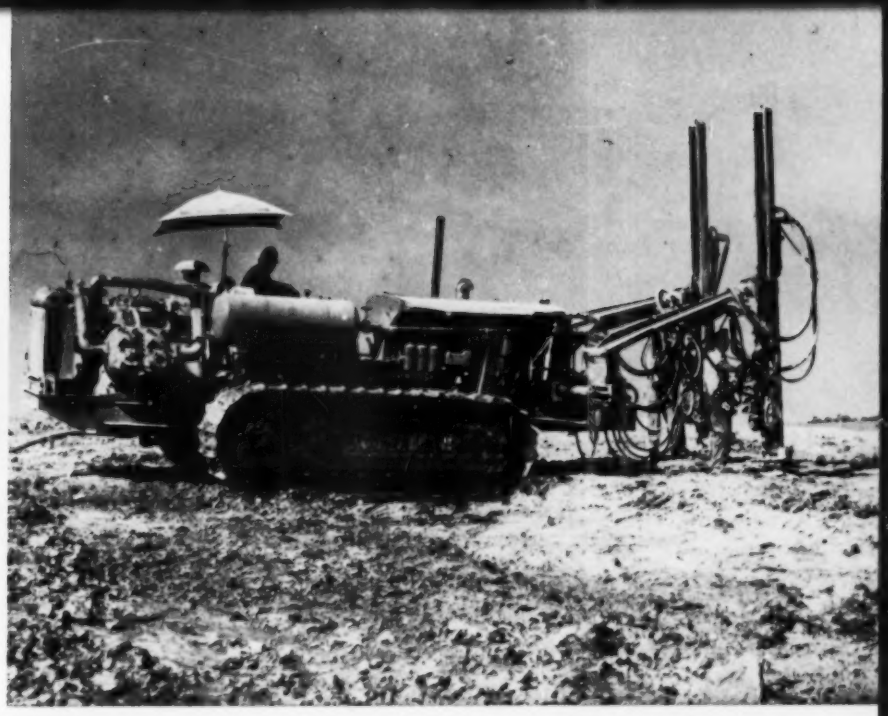
Mileage-wise, the center state of Missouri has completed, awarded, or put under contract, 3,370 miles of primary, secondary and urban (ABC) roads, and 143 miles of interstate roadway since August 1956. By the end of the current construction season, several other interstate projects will have raced under the finish wire for more impressive additions to the total.

Missouri now ranks ninth in the nation in interstate projects completed. The state is unwinding some highway snarls that have existed since horse-and-buggy days.

Near St. Louis

A typical interstate construction job is the 6.9-mile contract awarded Porter-DeWitt Construction Co., Poplar Bluff, Mo., for $4,171,810 for grading, excavating and paving on Interstate 44 in Franklin County near St. Louis. This project, extending from the junction

What appears to be a rock dead-end under this Interstate route 44 overpass is actually a plug left in a cut to bypass traffic around it until the structure is completed. At right a Lorain TL-20 truck crane with 60 feet of boom handles concrete forms.



Gardner-Denver sinker drills mounted on a D8 tractor open up a hard rock area for blasting. At rear of the tractor is a compressor operated from a power take-off.

of U. S. 50 with U. S. 66 just west of the Bourbeuse River and running northeasterly to Gray Summit, eliminates a section of three-lane "suicide" highway.

Rex Whitton, chief engineer of the Missouri state highway commission, who has sparked Missouri's spectacular interstate highway program and pushed it into the front ranks, has advocated speedy construction of interstate routes where most needed to relieve traffic congestion and where modern highways will conserve lives. The completed divided roadways, with wide median strips and opposing traffic lanes often out of sight with each other, have already proved the wisdom of this plan, through speeding traffic across the state and reducing the accident toll.

Missouri was the first state under the interstate act to let a paving contract and the first to let a construction contract. One of these firsts is on Interstate 44 which will eventually be connected across the state, and of which the Porter-DeWitt job near St. Louis is a key part.

The Porter-DeWitt job, historically, cuts through a lot of Missouri's colorful past.

Two of the state's oldest roads cross at Gray Summit, eastern terminus of the Porter-DeWitt contract—the Wagon Road and the State Road to the capital at Jefferson City.

Also superimposed on these old routes was the Old Wire Road, which is essentially the route of the present U. S. 66 and over which a large portion of Interstate 44 will run. The Old Wire Road was so named because it followed a telegraph line built by the federal government from St. Louis to Rolla, Lebanon and Marshfield, when the road carried military commands westward. The telegraph line was a tremendous forward step and a key to troop movements. During the Civil War, it was frequently cut by Confederate troops.

The Porter-DeWitt job consists of excavating, grading, bridging and paving of two 24-ft. divided portland cement pavements.

Broad Width

Right-of-way consists of a minimum width of 160 feet to a maximum of 285 feet except in the case of interchanges, where right-of-ways may be substantially greater. An existing roadway of the present U. S. 66 will be used in some places for west-bound traffic, and east-bound traffic will use a new Interstate 44 roadway under construction in this contract.

Excavation quantities consisted of 963,556 cubic yards of common dirt, 869,657 cubic yards of rock and 11,942 cubic yards of structure excavation, consisting mostly of rock.

Some of the rock formations that would ordinarily not require blasting stubbornly resisted rippers and scrapers. This material was cemented gravel chert, probably of glacial origin, formed when the ancient glaciers melted their ice and deposited mixtures of rock, lime and clay.

Usually rock sections consisted of hard Burlington limestone which had to be blasted. Fortunately one section passed state inspection for use as crushed granular base for the paving and service roads, so that Porter-DeWitt moved in a portable Universal crusher and screening plant and stockpiled the minus 1½-in. material.

Blast hole drilling was handled by a Joy Challenger; a pair of Gardner-Denver sinker drills mounted on a D8 Caterpillar tractor with a Gardner-Denver air compressor on the rear; and an Ingersoll-Rand Crawl-IR with a 600-cfm Gyro-Flo air compressor.

Blast hole depths ranged from 10 to 36 feet and holes were loaded with duPont nitro-carbo-nitro with appropriate detonators of duPont 40% dynamite in 3 x 15-in., 6¼-lb. sticks effectively spaced. Charges were stemmed with drill cuttings and set off with electric delay caps in rounds of 20 to 40 holes.

Each such blast pulled from 2,000 to 3,000 or more cubic yards of rock. This size of shot was necessary to keep ahead of the hungry 3½-yd. dipper on Porter-DeWitt's 71-B loading shovel, powered with a 6-110 GM 2-cycle diesel engine.

Most of the rock loading was handled by this machine which operated

Hard Burlington limestone is dug from a big cut by a 3-yd. 71-B shovel. Some of the rock excavation is used for gravel production.

consistently at 270 cubic yards per hour, even in zero weather in early 1959.

The 71-B loaded its rock into a fleet of eight Euclid end-dumps of 12-yd. capacity, which raced the rock to the fill areas. Assisting in the rock loading chore on some sections of the contract was a 2½-yd. Northwest shovel equipped with a Murphy diesel.

Bulk of the cuts were 30 feet deep with a few around 60 feet. Some of the bigger fills were 70 feet. The dirt excavation was handled by a fleet of six Euclid scrapers, powered with GM 6-71 diesels and six Cat scrapers pulled by D8 tractors.

For the 6.9-mile length of the contract, it had an unusually large number of structures—a total of nine. The longest was a 578-ft. continuous girder bridge over Bourbeuse River. Next was a 279-ft. structure over Pin Oak Creek.

An underpass for a section of Interstate 44, to permit present U. S. 66 to pass over the new location, required a bridge built on a vertical curve with two pin-joints and a continuous span in the center.

The remaining structures were concrete box culverts, the largest being a double 8 x 12-ft. box 239 feet long. The largest single box was 5 x 6 feet, and 86 feet long.

Sample quantities included 227,613 square yards of 9-in. concrete for the reinforced concrete pavement. Service roads connected with the project required 43,360 gallons of 200-250 penetration asphalt and 1,806 tons of cover material.

Concrete deck of the overpass is poured by a crew of Universal Bridge Co., Kansas City, Mo. Concrete is dumped in forms from a car riding on a monorail system.

Bridges Subbed

Porter-DeWitt subbed the structures to Universal Bridge Co., Kansas City, Mo. J. Machette is president of Universal and C. J. Broccard is general superintendent.

Concrete for bridge floors was delivered in transit-mix trucks from Pacific Ready-Mix Co., Pacific, Mo. It was deposited by a car operating on a monorail system, which proved very effective in accepting mixed concrete at one end of the birdge and depositing it throughout the bridge floor forms on the easily maneuverable monorail.

The Missouri state highway commission is represented on this section of Interstate 44 by R. A. Currie, district engineer, Kirkwood, Mo., and W. G. Gorman, resident engineer. Porter-DeWitt's superintendent is J. R. Trotter.

Deepen Great Lakes Connecting Channels

Excavation of 66 million yards of earth and rock will provide 27-ft. navigation.

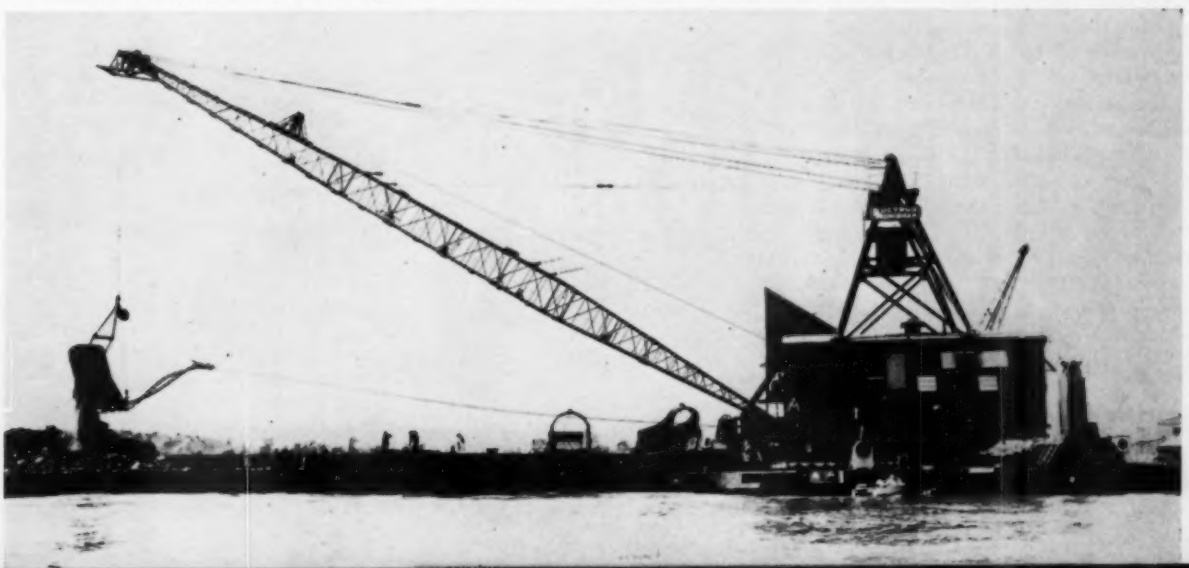
Blasted rock and earth are scooped from the bottom of the Detroit River's Amherstburg Channel by this 12-yd. dragline bucket. Sixty loads fill the tug towed deck scow.

THE Great Lakes together with their deep-draft connecting channels constitute the greatest inland waterway system in the world. The Great Lakes system, stretching 1,162 miles from the St. Lawrence River to Duluth, Minn., and 1,061 miles from the St. Lawrence to Chicago, is one of the world's busiest waterways. This system carries about 25% of the waterborne commerce of the United States, the preponderance of which is bulk freight such as iron ore, grain, coal, stone and petroleum.

The Great Lakes Connecting Channels include the waterways between Lakes Superior and Huron, Lakes Huron and Michigan, and Lakes Huron and Erie. The St. Marys River is the connecting channel between Lake Superior and Lake Huron. The Straits of Mackinac and the approaches comprise the connecting channel between Lake Huron and Lake Michigan. The St. Clair River, Lake St. Clair and the Detroit River, with the approaches in Lake Huron to the head of the St. Clair River and in Lake Erie to the mouth of the Detroit River, comprise the connecting channel between Lake Huron and Lake Erie.

The international boundary between Canada and the United States passes through all of the Great Lakes and their

The Samson, a barge-mounted 9-W dragline, is used by Marine Operators, contractor on the job. It is attended by four scows.



A 6-yd. Manitowoc 4500 dragline disposes of the dredged-up material by placing it in compensating dikes along the river channel.

connecting channels, except Lake Michigan which is wholly within the United States.

Although the lakes are deep, the connecting rivers are shallow. Over the years, it has been necessary to dredge the river channels to provide adequate depths to accommodate deep-draft lake vessels.

At the present time controlling depths of 25 feet in downbound channels and 21 feet in upbound channels are available between Lake Superior and the lower lakes. The deeper depths were provided in the downbound channels to accommodate deep-draft loaded ore carriers.

Recognizing the inadequacy of the connecting channels for the newer deep-draft vessels and with the advent of the St. Lawrence Seaway which would provide a 27-ft. depth channel westward only as far as Lake Erie, Congress authorized deepening of the channels between Lake Erie and the upper three lakes to provide a minimum controlling depth of 27 feet.

The deepening project was initiated in May 1957. It is primarily a large-scale underwater excavation job, embracing the removal of about 64 million cubic yards of earth and rock. It requires the mobilization and deployment of one of the largest and most varied fleets of dredging equipment ever assembled, and exceeds by far, any previous undertaking of this kind during the 133-year experience of the Corps of Engineers on the Great Lakes.

One of the areas where work is currently active is the Amherstburg Channel of the Detroit River.

Sweeping across the deck of the scow, the Manitowac's bucket skims off rock.

and about 37 feet wide. She is a sectional barge, fabricated by the Manitowoc Shipbuilding Co., of Manitowoc, Wis., and shipped by rail to Ojibway, Ont., (opposite Detroit) in January 1957. She is equipped with 20 drill frames 50 feet high, drilling to about 35 feet. Seven air compressors operate the drills and other equipment.

Hornet IV works three 8-hour shifts, six days per week. About seven drillers work at a time, moving from one drill to another. When all 20 holes are ready, the *Hornet* is "walked" off about 200 feet by means of its four spuds, and the charge is exploded.

Measure Vibrations

To provide accurate blasting control three seismograph crews, employed by the Army Engineers, operate along the shore, recording every blast on film, and order decreased charges when desirable. Aboard the *Hornet*, the water surface is seen to bubble up intensely for a few seconds—and the shock is not excessive. The full cycle of 20 blasts is completed and set off every 60 minutes.

The *Hornet* is accompanied by the *Samson*, a steel scow 175 feet long and 65 feet wide. She carries the unique burden of a Bucyrus-Monighan 9-W dragline. Dumping reach of the boom is 150 feet. Bucket capacity is 12 cubic yards.

These are the unique features of Marine Operators' work—the multiple deep drills, which are air-operated, and the use of a land-type dragline.

The *Samson* deposits excavated material on a fleet of four flat steel scows, 149 feet long and 40 feet wide. Each has the capacity of 750 cubic yards of material.

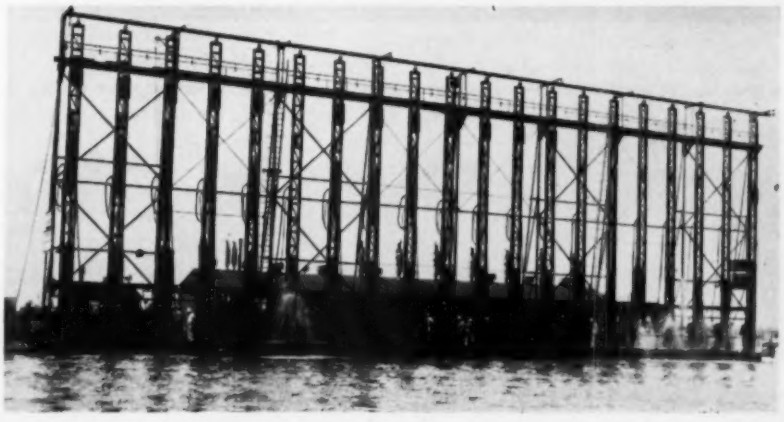
Excavated material is removed from the deck scows by a 6-yd. Manitowoc

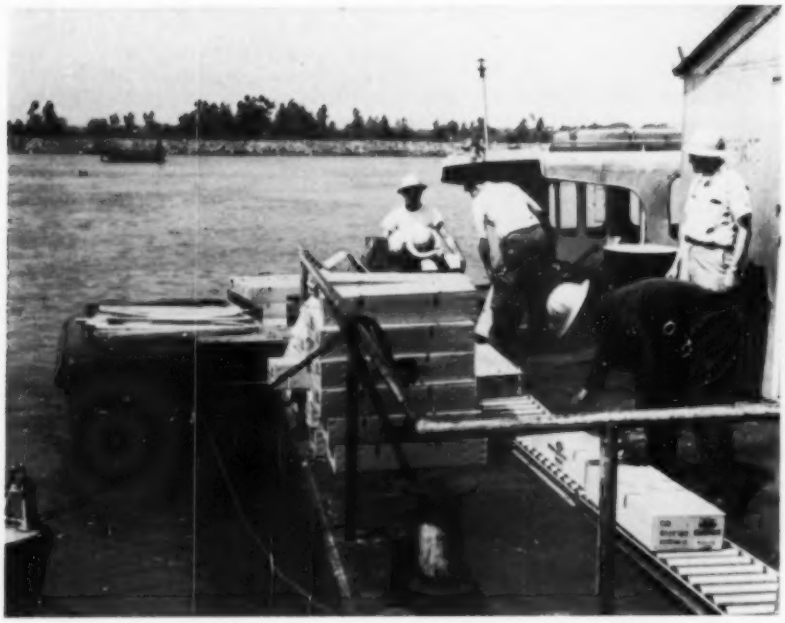
The Amherstburg Channel was bid on by contractors in sections—approximately the upper six miles of work was awarded to Marine Operators, the lower two to Great Lakes Dredge and Dock Co., each using somewhat different equipment. About 3 million cubic yards of material are to be removed from this channel—mostly rock. Work is scheduled for completion in November.

Marine Operators is a joint venture of Al Johnson Construction Co., Cunningham-Kiewit Co., Peter Kiewit Sons' Co., and Morrison-Knudsen, Inc. Their contracts are for $16,322,857. The entire area is in stratified limestone rock.

The prime unit for this contractor is the drillboat *Hornet IV*—160 feet long

(Above) Drilling aboard the *Hornet IV* continues 24 hours per day six days a week. (Below) Five to six drills are operated at a time until all 20 units have performed.





(Above) Each day, a supply of gelatin dynamite is brought aboard a barge attached to the drill boat. Blast holes are detonated electronically after the barges move back.

(Below) After an area has been blasted and dredged out, a sounding crew of the Engineers makes sweep to insure that the contractor has achieved proper depths.

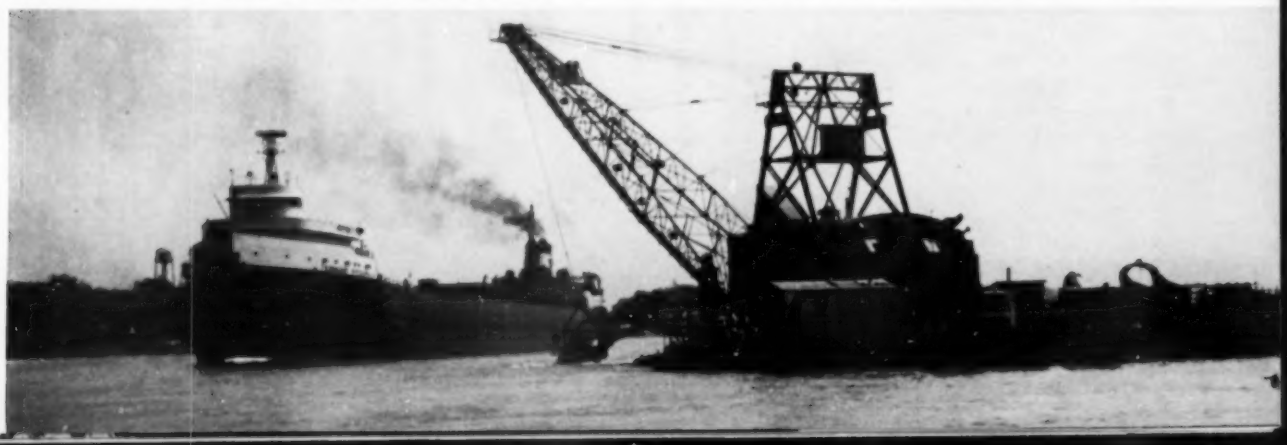
model 4500 crawler-mounted dragline. The Manitowoc is based on a compensating dike. An extension of this dike is now being built up, extending downstream of the channel. Another compensating dike about 6,000 feet long is being constructed with the excavated material projecting toward the open lake area at the lower end of the channel.

Great Lakes Dredge and Dock completed its contract, amounting to $6,566,928, in the Amherstburg Channel in April 1959.

Study Harbors

The need for improvements at harbors on the Great Lakes to accommodate the large, deep-draft vessels which will transit the deeper channels has been recognized. Congress has directed the Corps of Engineers to make a study to determine the advisability of further improvements of harbors on the Great Lakes in the interest of present and prospective deep-draft commerce. In deter-

Because vessel traffic cannot be stopped, dredging is done in half-channel widths with traffic passing by at reduced speeds.

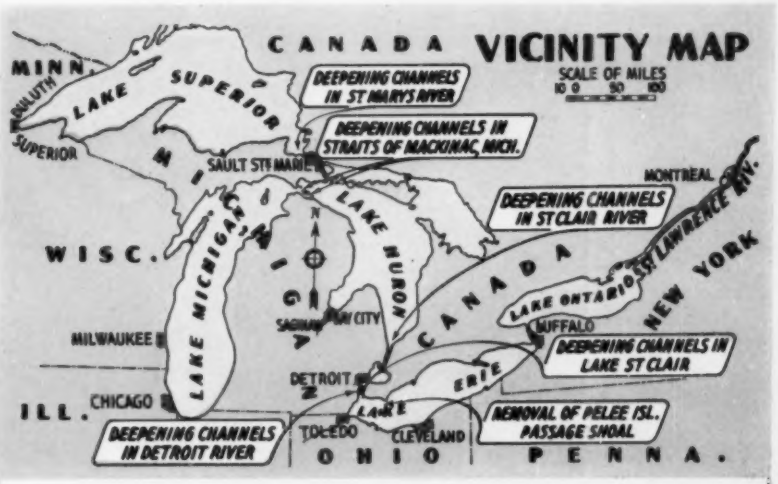


Two seismograph crewmen prepare to record one of the underwater blasts which occur every 50 minutes. The Corps of Engineers maintains a constant vigil on each blast to safeguard property.

mining whether improvements can be justified at Great Lakes harbors, three major elements are studied: prospective traffic, engineering design and economic analysis. Every improvement must be a sound investment.

This study is now in progress. Separate interim reports are being prepared on numerous individual harbors and certain bulk commodities. Once completed the results of these studies are reported to Congress for authorization and subsequent appropriation of funds.

When the job is finished, the Great Lakes navigation system and its links with the Atlantic Ocean and the Mississippi River will provide a vast, interconnected waterway system, reaching from Montreal, Que., to Mexico (via the Gulf Intracoastal Waterway), from Pittsburgh, Pa., to Sioux City, Iowa, and from Duluth, Minn., to the ports of the world.



Six Major Areas of Work

WHEN completed in 1964, the Great Lakes Connecting Channels project will have cost $146 million, but it is estimated that savings of almost $10 million in three commodities alone —iron ore, stone and grain—will be made annually in transportation costs.

Under the direction of the U.S. Army Engineer District, Detroit, Mich., all channels will be dredged to a minimum controlling depth of 27 feet. The scope of work in each area is as follows:

St. Marys River—deepen 63 miles of channel, varying in width from 300 feet to 1,500 feet, to depths varying from 27 to 30 feet. Remove isolated shoals. Construct anchorage areas at Point Iroquois Shoal 29 feet deep and in Lake Nicolet 28 feet deep.

Straits of Mackinac—remove shoals over an area 4,000 feet by 1,250 feet, between Mackinac Island and Round Island to a depth of 30 feet and removal of Poe Reef Shoal to a 30 foot depth.

St. Clair River—deepen 46 miles of river channel, varying in width from 700 feet to 1,400 feet, to depths varying from 27 to 30 feet. Included in this phase of work is a cutoff channel at Southeast Bend in the St. Clair River which will be 6 miles long, 700 feet wide and 27 feet deep.

Lake St. Clair—deepen 17 miles of channel, varying in width from 700 to 800 feet, to 27.5 feet.

Detroit River—deepen 32 miles of river channels, varying in widths from 300 feet to 1,200 feet, varying in depths from 27.5 to 29 feet. Deepen channel extending 9 miles into Lake Erie from the Detroit River light to 28.5 feet over a width of 1,200 feet.

Lake Erie—remove Pelee Island Shoal to 28.5-ft. depth.

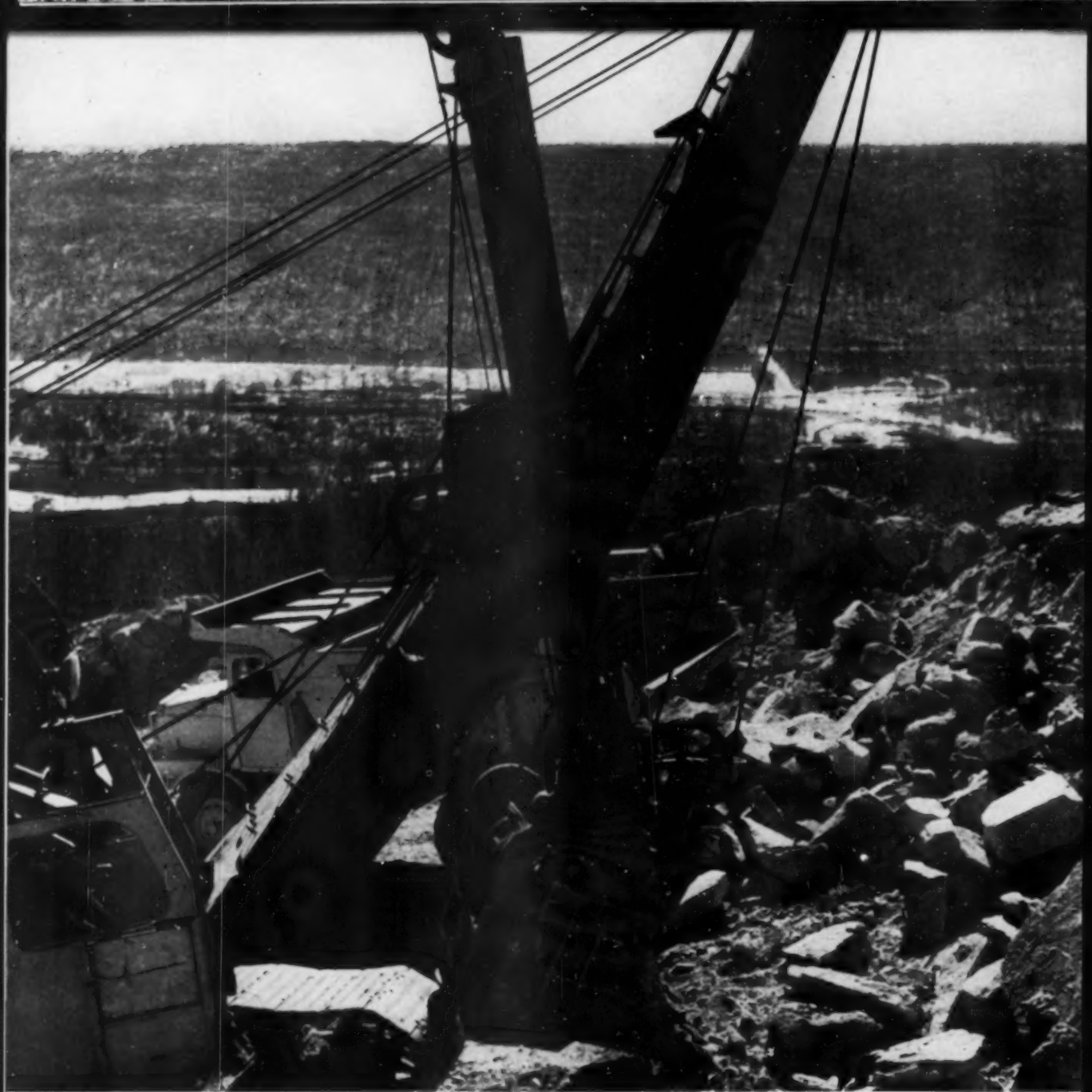
Marine Fleet

The project requires an array of equipment including dipper dredges, large hydraulic dredges and draglines. Each dipper dredge is attended by one or two large tugs, a derrickboat, one or two launches and from two to four large dumpscows. The work force necessary to man and supervise the dredge fleet requires from 800 to 1,000 men.

The dredging job is complicated by the constant stream of lake vessels—one every 15 to 20 minutes day and night during the height of the navigation season—that pass through the channels.

This traffic is stopped or slowed down only when navigation is hazardous because of fog, storm or accident. For example, during a season, some 30,000 vessels pass through Detroit River channels. Because this traffic cannot be stopped, the dredging work must be done in half-channel widths with normal vessel traffic proceeding at reduced speeds in work areas.

Work is carried on continuously except for the winter months when ice conditions require layup of floating plant.



Bethlehem Wire Rope Helps Clear Way for Mountain Highway. This action photograph shows Bethlehem 1⅛-in. shovel hoist ropes at work on a 2½-mile road relocation project atop Broad Mountain, on Pennsylvania's winding Route 29. The contract, supervised by the Pennsylvania Dept. of Highways, called for the removal of 900,000 cu yd of sandstone and earth.

On this job the Bethlehem wire rope is subjected to hard usage, day after day. Yet it keeps coming back for more—just as it is doing in thousands of construction jobs all across the land.

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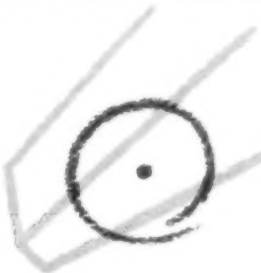

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Memphis Unsnarls Traffic Jams

Traxcavator with 1½-yd. bucket loads a 2-ton end-dump with dirt excavated in curb and gutter construction. The truck hauls to a spoil site down the street.

With its counterweight tight against utility pole, backhoe comes up with heaping dipper of dirt while digging trench for the drainage pipe. Although machine usually operates under cramped conditions, it opens 200 and 300 feet of ditch per day.

MOST American metropolitan centers have experienced tremendous growths in population during the past few decades. An obvious result of this growth is the greatly increased number of vehicles that have come to choke city streets—streets never designed to carry the present-day load of commuters, shoppers and commercial cars and trucks.

Many cities plagued with congestion problems have initiated long-range programs designed to meet the demands of these almost constantly heavy traffic flows. Among them is Memphis, Tenn. Here, some $8 million has been spent during the past two years to widen streets and build additional municipal parking facilities. Another $4 million has been set aside for the same purposes this year.

"There's no telling how much will be spent or just how long our program will be in effect before we're through," remarked one city official.

The effort by Memphis to ease its traffic problem has meant some fair sized jobs to some contractors specializing in city street widening and parking lot construction. One firm taking advantage of the situation is the W. L. Gay Contracting Co., Memphis. Since being founded in 1950, Gay has built up a reputation for doing outstanding work in city-type construction and is said to be a well organized, experienced and highly efficient outfit. It completed 10 local contracts last year. Those involving street widening ranged from the longest 7,000-ft. job to the shortest 1,200-ft. job.

The Gay firm has had to become expert in many phases of construction, particularly because street widening projects include such diverse requirements as building bridges and culverts; placing concrete for curbs, gutters and sidewalks; laying gravel for and paving roadway travel lanes; and installing drainage and sanitary sewers.

Multiple Projects

"We like to have from four to six projects going at once so the entire organization is always busy," said stocky, silver-haired John Michie, Gay's general superintendent. "Every effort is made to finish a job at least 90 days from the

Supt. Michie directs all field operations. His methods have brought Gay a reputation for doing outstanding work.

Overcrowded streets bring serious traffic congestion problems to Memphis, Tenn. Local contractor specializes to get fair share of $4-million-a-year, long-range improvement program.

time its started, although we're sometimes held up by the installation, repair or removal of utility lines."

Success in city street building and parking lot construction depends on having highly skilled workmen and the best equipment available, according to Superintendent Michie.

Most Gay employees have been with the firm a number of years. Each man plays an important role in the organization. He must know his job well, take an interest in his work and always pull for the company. Anyone not coming up to these standards is soon taken off the payroll.

An inventory of Gay's equipment shows the firm owns a line of machinery well suited to its specialties. There are two Cat front-end loaders—955A and 977A Traxcavators; a fleet of end-dump trucks, including Ford F600's and International R190's of 2-ton capacity and 4-ton Macks; an International TD-18 and a Cat D7 bulldozer; two Bucyrus-Erie 22-B's; two Cat No. 12 motor patrols; Bros sheepsfoot rollers; a Bros pneumatic roller; and paving equipment.

"We're proud of all our machinery. It's the best you can get," said Michie. "Take the 22-B's for example. They're easy to operate and constantly produce high output. One is six years old; the other was just recently purchased. The six-year old machine has given us exceptionally fine service. The only repair work ever done on it was rebuilding the crawler tracks."

Street building usually follows these steps. Trees, fences and other structures are first removed from the right-of-way. Ditch excavation then takes place, followed by the installation of storm or sanitary sewers. Curbs and gutters are next. A gravel base is finally put down on the roadway, and the job is completed by smooth surfacing the street with a bituminous asphalt topping course.

Gay subcontracts the asphalt work to Lehman-Roberts, a construction firm with headquarters in Memphis. Ready-mix concrete is used almost exclusively for all concrete items. It is purchased from Fisher Lime and Cement Co., Memphis.

When the notes for this article were gathered, Gay crews had just completed the grading on a downtown parking lot job and were in the excavating phase of a street widening project. Nearly a mile of Chelsea Avenue on Memphis' northwest side was being widened by some 30 feet. The $150,000 contract called for constructing curbs and gutters, laying a concrete base roadway topped by three inches of bituminous asphalt and installing some 4,000 feet of 15 to 36-in. diameter concrete drainage pipe.

Gay's new 22-B was handling the trenching work, digging through a ground formation consisting chiefly of hard clay. Utility lines, utility line poles, billboards, the proximity of buildings and heavy traffic flows made excavating a rather laboring chore on this job.

Michie believes the success of any project depends on keeping it closed up tight. At Chelsea Avenue, a pipe laying crew worked fast so no more than 50 feet of ditch were open at any one time. When pipe sections were matched and then sealed with mortar around their joints, the 1½-yd. Cat 955A moved right in to backfill. Surplus dirt was quickly loaded into a fleet of the firm's 2-ton end-dump trucks, which hauled to a spoil site along the right-of-way. The Traxcavator then leveled out the

(Above) Traxcavator carries section of pipe from roadside stockpile and lowers it to workman (below). Crews work fast so no more than 50 feet of ditch are opened up.

area, making it ready for the next construction step—building curbs and gutters.

Michie put a 30-day completion deadline on the Chelsea Avenue job but was thrown off schedule by a long seige of inclement weather. He still hoped to finish up within 90 days.

Job locations are generally pretty widely scattered around town in city construction work. A 22-B, a Traxcavator, end-dump trucks and pipe men might be doing a sewer job in one section; a bulldozer might be grading a parking lot in another; curb and gutter work might be taking place in a third; and paving might be underway in still another. This situation could make control an acute problem. But Superintendent Michie is constantly on the move, checking each project several times a day. He also has good foremen and can depend on each employee to show some initiative of his own.

Since Gay tries to have several projects under construction at one time, shuttling equipment from job site to job site is a major problem. John Michie doesn't believe in problems, though. "Those that do exist are merely viewed as part of our work and something that goes along with a job. Take traffic as an example. Try to control it and you have the darndest luck in the world. Ignore it and you have no trouble at all."

Good Reputation

Gay's reputation for doing oustanding work is easily explained. There persists an attitude among employees that, no matter how good past performances, self improvement is always possible. New contracts are undertaken with the idea of "doing just a little better than last time." Each member of the organization looks back on the firm's completed projects with a sense of pride and accomplishment.

The Gay firm limits its construction activities to the city of Memphis and surrounding Shelby County. Future plans do not include bidding on contracts outside this area, "unless we absolutely must." A contractor, according to Michie, "does best in his own back yard. He's familiar with conditions there, knows the people he's working for and has an idea of what they want and expect. We're a hometown outfit and plan to remain one as long as possible."

The firm's business matters are handled by its owner, W. L. Gay, who has nearly 50 years experience in the construction industry. B. E. Nea was foreman of the Chelsea Avenue job.

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Sprinkling System Speeds Sand Excavation

Contractor easily handles hard-to-move dry sand on Texas highway job.

by Floyd Suter Bixby

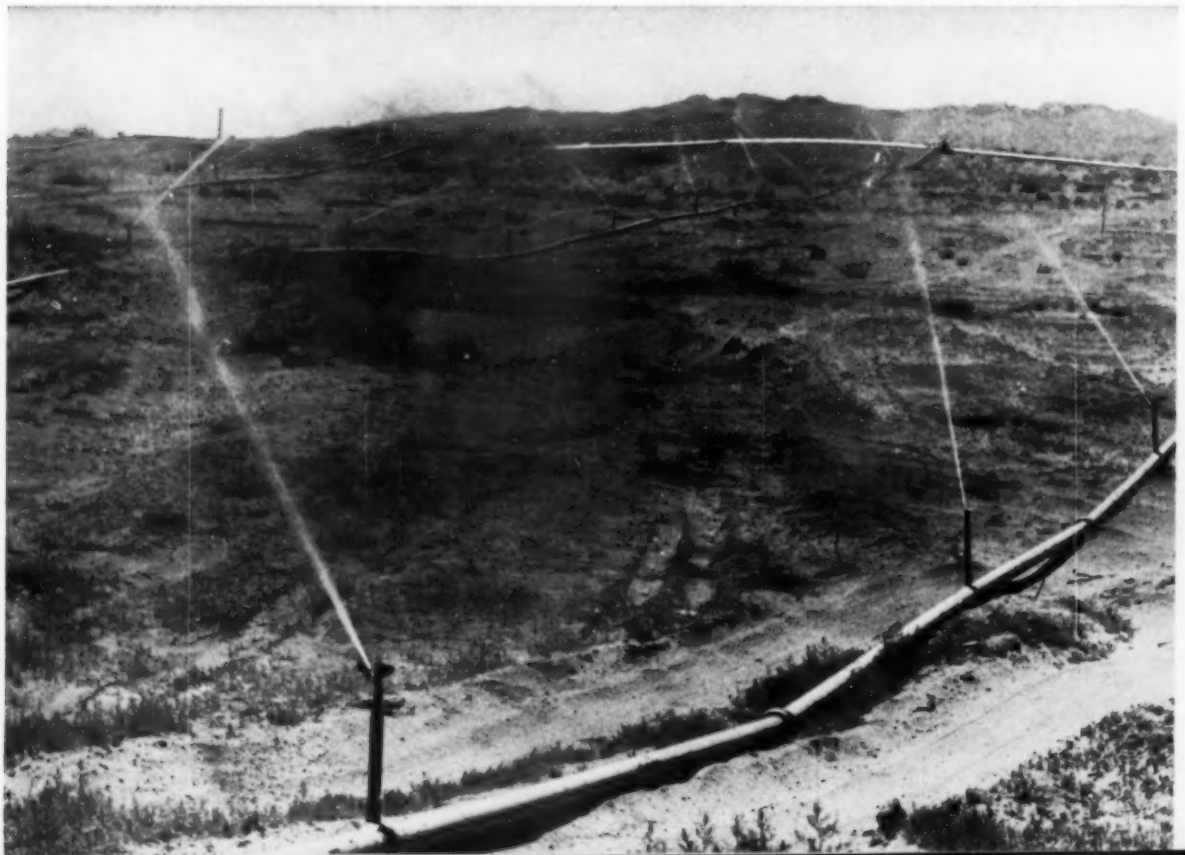
BY USING an agricultural idea straight out of the fields, a Texas contractor has solved what has been a perennial problem: the grading of dry blow sand. In the process, Contractor Hugh McMillan, El Paso, Texas, boosted the output of his scrapers to a point where he could bid the material in for 20½ cents per cubic yard. The contractor also was instrumental in showing even his competitive contractors how dirt prices could be downgraded for 75 miles of by-pass expressway construction on U. S. highway 80, reaching from a point 50 miles east of El Paso to the New Mexico line north of the city.

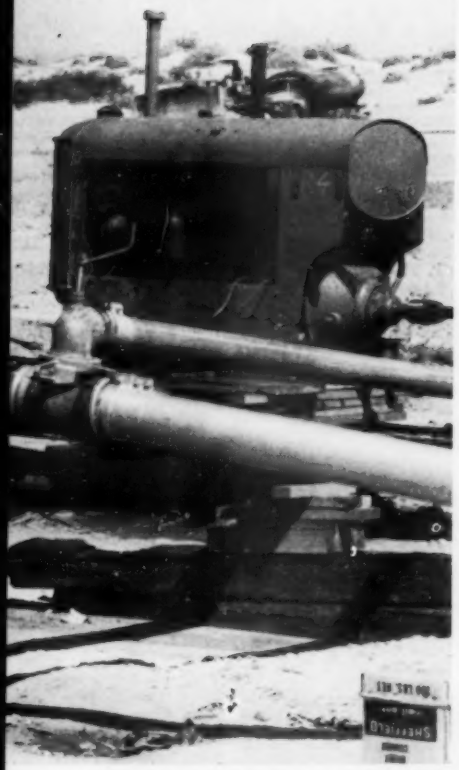
Dry blow sand has been a real problem for contractors all over Texas, New Mexico, Arizona and sections of Nebraska. When the material is opened up, it becomes impossible for rubber-tire equipment, even in cut sections. Fills are hard to build because water trucks must be dragged through to get necessary moisture in. Ironically, this type of sand has excellent bearing value when it's sprinkled with its optimum water content, or when it is closely confined. But in the grading stage, it's a first-class problem.

Aluminum Pipe

What McMillan has done has been to bring lightweight aluminum pipelines, quick couplings and sprinkler-type irrigation heads right into the borrow pits and cuts. The moisture is then delivered to the material on a basis that develops excellent control. When the right amount of water has been sprinkled, the water penetrates to proper depth— this can readily be determined. The sprinkler system is then shut off and moved in about 1½ to 2½ hours to the next location by a gang that totals only four

Long rows of pipe cover the borrow pit area. After water penetrates to proper depth in 1½ to two hours, pipe is relocated.





Pump setup shows Marlow booster and Allis-Chalmers engine-driven deep well turbine discharging through the pipe.

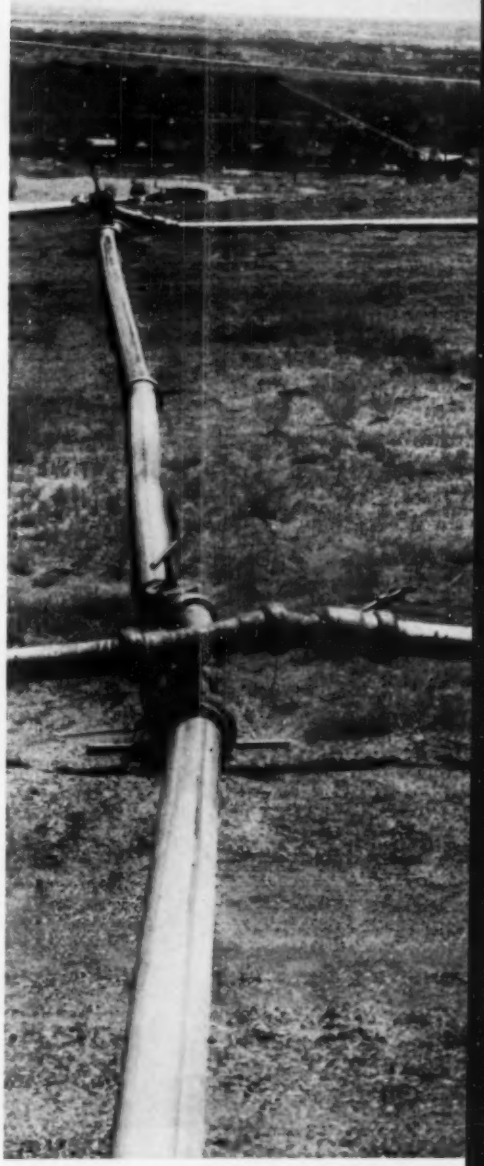
men. Fewer men are needed for the sprinkler-type irrigation than would be necessary if water trucks were being used.

McMillan is using Alcoa extruded seamless aluminum tubing in 4, 5 and 6-in. diameters. Ames patented couplings, which go together quickly and bleed the line automatically if pressure falls below 10 pounds, make up the connectors. The sprinkler heads are Buckner and Rainbird. Water pressure from a deep well supply is being developed by three Berkeley centrifugal pumps driven by Chrysler V-8 industrial engines.

The main water supply to a cut is delivered by a 6-in. aluminum line which weighs only 1½ pounds per linear foot. Two men can handle the 6-in. section, 30 feet long, with ease. Five-inch laterals, which also form main header lines go out from this supply, and rows of 4-in. sub-lateral pipe are spaced 50 feet apart. About 100 sprinkler heads are placed on a section, and operate under about 65 psi pressure. Average rate of penetration is about eight inches per one inch of artificial rainfall, or about five feet per 24 hour period, with a pump input of 550 gallons per minute.

According to McMillan's general superintendent, the sprinkler system has been so accurate that the Texas Highway Department's engineers will accept input readings directly from a master meter at the pump. There has been no bogging down of scrapers because the sand, saturated with its optimum moisture content, has excellent bearing value. The fleet of six Caterpillar DW21's, a LeTourneau-Westinghouse scraper and two International-drawn 555 Heiliners, all are picking up overflowing payloads, rather than sub-capacity loads, with the help of Caterpillar D9 and International TD-24 pushers.

Alcoa aluminum tubing is so light it loads with unbelievable ease. One man carries a 5-in. joint 30 feet long without strain. Four and 6-in. sizes are also used on the job.



(Above) Ames couplings are used to take small diameter laterals off the main line.

The process uses less water than conventional sprinkler trucks would require, because the moistened sand is brought at its optimum content to the fill and is quickly put into place by rollers. What little surface evaporation there is is replenished between lifts by a small 1,200-gallon truck tanker which has no trouble getting over the pre-conditioned fill.

The idea has eliminated whatever previous concerns McMillan's men might have had about handling dry sand of the blow sugar types, and has convinced other contractors, too, that this material need not be a grading problem if it's handled properly.

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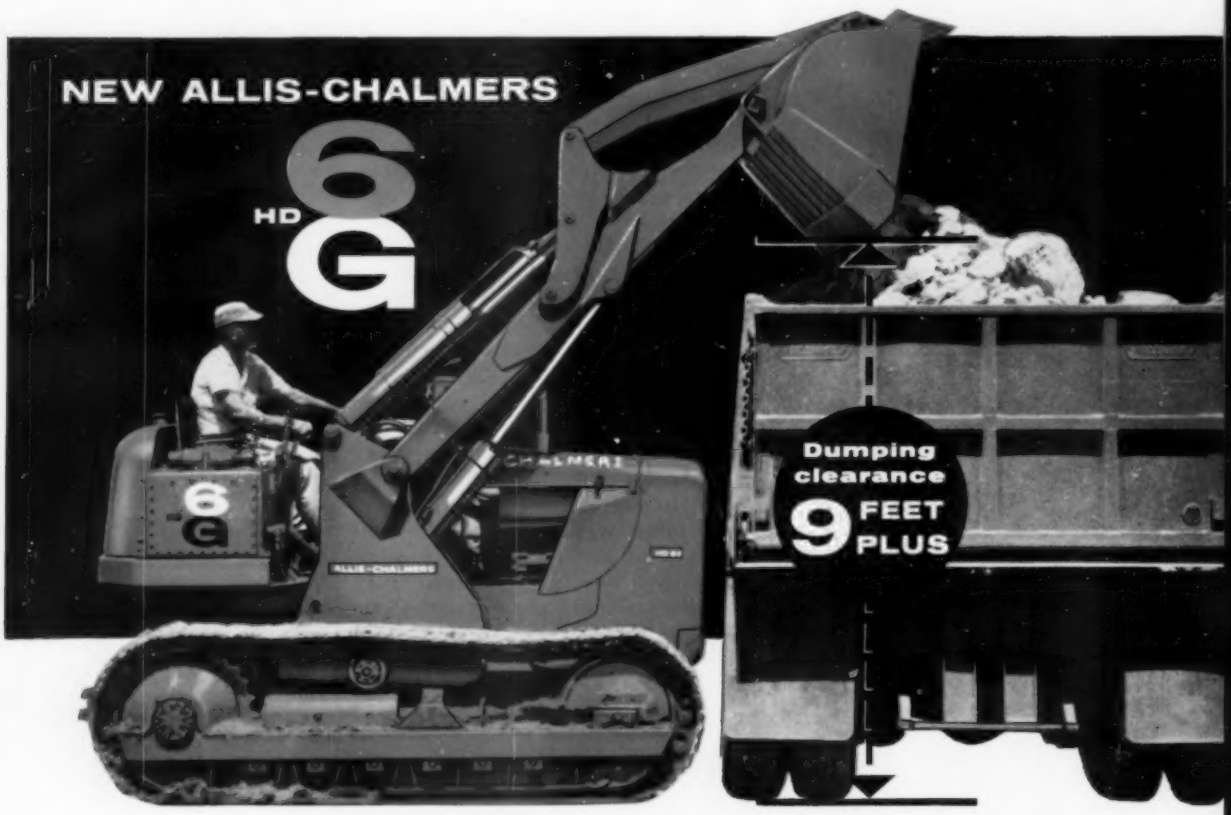

What you want most in a 1½-yd tractor shovel is here. The new 6G gives you advanced-design features that mean extra productive ability you can *measure*—plus new comfort and convenience for the operator, servicing simplicity and big-tractor strength.

But this is only half the story. Your Allis-Chalmers dealer can tell you much, much more—and *prove* it, too! Why not let him set up a demonstration *now*, on your tractor shovel job? Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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With as much as a foot more dumping height than the maximum for ordinary tractor shovels, the 6G reaches 'way out to dump over the center of big, sideboarded, 12-yd trucks. This height-and-reach combination pays off on other jobs, too—like stockpiling or loading out over the sides of excavations.

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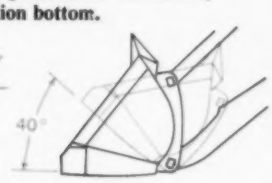
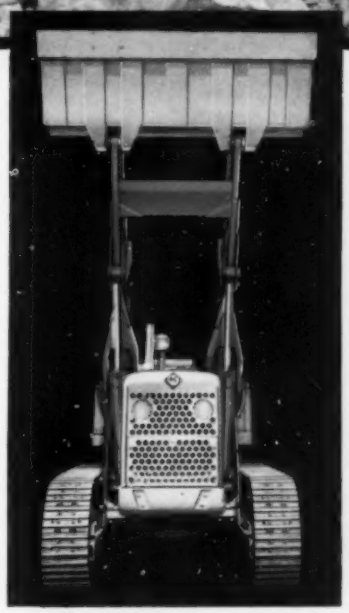
Super pry-out action

The new 6G's curved-bottom bucket puts a 10¼-ton force at the cutting edge. This unique "rolling-leverage" action is far more effective than the fixed, toe-and-heel principle of an ordinary, shoe-type bucket bottom. You can break out stubborn boulders, stumps and old pavement easily—get *full* loads *fast* in hardest materials.

Bucket tips back 40° on curved, box-section bottom.





Speed with stability and control

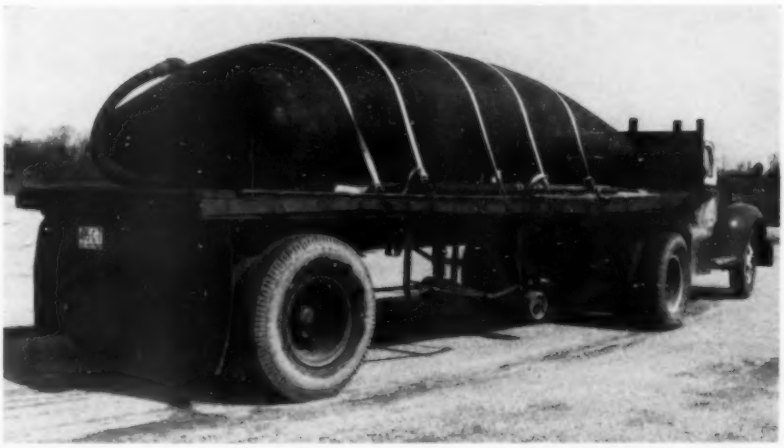
Shift from any forward speed to either reverse speed with a single lever—choose the *right* speed for every tractor shovel function. Powerful hydraulics put big loads right to the top, then bring the bucket down in a smooth, swift cycle. Nearly seven feet of track on the ground . . . positive, accurate controls . . . and new "down-slope" visibility let you handle the bucket and tractor with unheard-of balance and precision.

"In-line" strength

Booms and linkage are twin towers of solid-steel strength, straddle-mounted on wide-spaced pivots in the double-walled side frames. Lift and dump cylinders operate in exactly the same line, put dependable hydraulic power to work *straight from the shoulder.*

..power for a growing world

News from the Field



With a pillow like this one, you don't need a bed. It's a 10,000-gallon pillow tank, manufactured by the Aviation Products Division of the Goodyear Tire & Rubber Co.

AMC To Meet in Denver

Members of Congress, government officals, and leading figures in the mining industry will address the 1959 Metal Mining and Industrial Minerals Convention at Denver, Colo., Sept. 14-17. The convention is an annual affair of the American Mining Congress.

The preliminary program for the meeting includes nearly a score of sessions dealing with national policies, and with mineral and metal production and processing methods. The program was arranged by a national committee of mining men from all parts of the country representing all branches of the industry.

Sessions of the four-day program will discuss underground and open pit mining methods, milling and metallurgy, uranium, mine safety, labor relations, taxes, management and general operating problems.

During the convention, the mining industry will adopt a series of resolutions setting forth its views on national policies which affect the industry. Several thousand mining men from this country and abroad are expected to attend.

Scale-model of Russian walking dragline attracted attention at recent Soviet Exhibition in New York City's Coliseum. Built by Russian trade school pupils, model is a 1/25th scale version of a huge machine carrying a 328-ft. long boom and 35-yd. bucket.

Rubber Tanks Store Liquids

Increased demand for economical transportation and storage of bulk liquids has caused the Goodyear Tire & Rubber Co., Akron, Ohio, to expand its line of collapsible pillow tanks.

Goodyear, which previously built the world's largest fabric container—a 50,000-gallon capacity unit—announced that its pillow tanks can now be constructed to accommodate 200,000 gallons.

The tanks can be used to transport fuels and other liquids on trucks, railroad cars and barges. The containers are made of rubber-coated nylon.

The collapsible pillow tanks have several advantages over other means of liquid storage or transportation.

They are comparatively lightweight, easy to handle and can be rolled up like a rug when not in use. Durability is proved by the fact that the tanks can be overloaded by approximately 25% without damage. Virtually all types of liquid, with the exception of acids, may be stored or transported. They are effective in virtually any climate, with temperatures ranging from –40° to 165° F.

The tanks are constructed with one or two plies of synthetic nylon. When two plies are used, the outer ply consists of nylon cloth coated on both sides with gasoline resistant synthetic rubber. The inner ply consists of a similar but lighter ply of nylon cloth.

The inner and outer surfaces are coated with Chemigum, a gasoline-resistant rubber made by Goodyear.

Size and weight of the containers vary with the capacity rating. A 10,000-gallon tank, for instance, is 42 feet long, 12 feet wide and weighs 580 pounds when empty. A 200,000-gallon tank is 124 feet long, 38 feet wide and weighs about 4,000 pounds.

The size of pillow tanks used as transportation containers is restricted by the area of confinement, depending on the size of the truck, railroad car, barge or other vehicle which will carry the containers.

Most of the tanks now being manufactured are in the 1,100 and 1,800-gallon sizes, with a two-ply tire cord construction.

Life span of the collapsible containers is impressive. Several tanks delivered to the military seven years ago are still in use.

One of the more unique commercial uses of pillow tanks is being made by the Morrison-Knudsen Co., which has been using eight 10,000-gallon tanks for about two years.

The tanks are placed on a leveled area midway on a small hill, and are filled by gravity from a tank truck on the crest of the hill, through a filler opening on the top and end. The fuel is dispensed at the base of the hill from a discharge fitting on the bottom and opposite end from the filler. By using this method, no pumping equipment is necessary.

Charles E. Reed Dies

Charles E. Reed, 83, died August 5 at a Glendale (Calif.) sanitarium. Mr. Reed was one of the founders and was active in the construction firm of Gibbons & Reed, Salt Lake City, Utah.

He was a life member of the Associated General Contractors of America.

He is survived by his wife, Sara Ackerman Reed and five children. They are: Homer, Dorothy Reed Jones, Richard, Ralph and Charles, Jr. Mr. Reed is also survived by 17 grandchildren and two great grandchildren, and one brother, George Reed of Kansas City, Mo.

Burial was at Forest Lawn, with services held at the Wee Kirk of the Heather.

Drilling Symposium

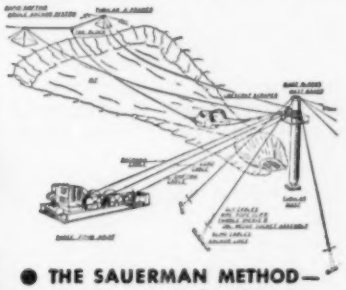
Exploration drilling will be the topic of a three-day symposium to be held at Pennsylvania State University, University Park, Pa., Oct. 8-10. Jointly sponsored by the departments of mining

Continued on page 44

Profitable Sand and Gravel Handling Starts with a Sauerman DragScraper
digging *and hauling to plant*

This digging and hauling operation is being handled with a 3-yd. DragScraper.

This 2-yd. DragScraper is dumping river gravel dug from 50 ft. of water into grizzly feeding conveyor to plant. *See Sauerman News No. 147.*



● **THE SAUERMAN METHOD**— *showing a basic DragScraper installation. Variations of this method are Sauerman engineered to handle the toughest digging jobs at the lowest cost per cu. yd.*

A Sauerman DragScraper handles the two basic steps of material flow—digging and hauling—in one continuous operation. No double handling is required. You cut labor costs in half—or even more—because a single machine, controlled by one man, replaces the multiple equipment required by other methods.

Profitable handling is further assured by a maintenance cost of only 1½ cents per cu. yd. for the average size Sauerman installation. On larger machines, the increased volume drops this cost still lower. You'll save money on power, too, by eliminating heavy machinery with limited handling-to-dead weight capacity. You pay only the cost of moving the actual digging tool—a Crescent DragScraper.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, depth and plant layout. DragScraper machines in sizes from ⅓ to 15 yds. provide delivery at the lowest cost per cu. yd.

Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of materials handling and excavating machinery experience. Ask for Catalog A (DragScrapers).

SAUERMAN BROS., INC.
622 SO. 28th AVE.
BELLWOOD, ILL.
Cable: CABEX—Bellwood, Ill

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

News . . .

Continued from page 43

engineering at the University of Minnesota, Colorado School of Mines and Pennsylvania State University, this will be the ninth annual Drilling Symposium held since its inception at Minnesota in 1950.

Five technical sessions will deal with statistics and research in explorations; bit design and rock penetration; improving core recovery; drilling and sampling of unconsolidated materials; and innovations and case studies in drilling practice. The program will be of interest to engineers, geologists, contractors and operators.

The Exploration Drilling symposium is one of three jointly sponsored by the three schools. Colorado was host for the Rock Mechanics Symposium in April of this year and will hold the Drilling and Blasting Symposium in 1960.

High-Class Haul Road Serves Phosphorus Mine

Monsanto Chemical Co., Soda Springs, Idaho, has put into service a new private road connecting its elemental phosphorus plant at Soda Springs and its Ballard phosphate mine more than 11 miles away. J. L. Christian, vice president and the general manager of Monsanto's Inorganic Chemicals Division at St. Louis, Mo., and H. W. Morrison, chairman of the board and president of Morrison-Knudsen Co., Boise, Idaho, officially dedicated the road. The highway was constructed by Morrison-Knudsen.

Construction of the road began in September 1958. It enables Monsanto to use specially constructed carrier units capable of hauling 75 tons of ore each trip. These units are believed to be the largest highway haulers in the United States. Each of the haulers consist of a tractor and two trandem-trailer rigs. Overall length of the combination is almost 100 feet and gross weight is 200,000 pounds.

The road, 26 feet wide, is fenced on both sides. A number of underpasses along the route permit farmers to move machinery and stock from one side to the other without crossing the right-of-way. There is one bridge, which crosses the Blackfoot River.

The new road allows increased efficiency in hauling of ore to the plant. Four of the new carriers will do the work of the 15 smaller trucks formerly used in the operation. Each new hauling unit can make the round trip from mine to plant in about one hour.

The road was designed to furnish utmost operational safety, Christian pointed out. It will remove the ore truck traffic from state and county roads. Where the road crosses state highway 34, and also where it crosses a country road leading to the town of Conda, signal lights have been installed which show green to public traffic. Pressure pads located on the Monsanto road 500 feet from the intersections actuate the signals to turn red to highway traffic. The systems are so timed that the ore truck must slow down to 15 mph at the intersections to cross without stopping. These crossings were made in compliance with state highway engineers' recommendations to give the public maximum safety.

The road will be policed by roving guards to see that all public traffic is kept off the haulage way, a Monsanto spokesman said.

The plant at Soda Springs is one of two elemental phosphorus plants operated by Monsanto's Inorganic Chemicals Division, the world's largest producer of elemental phosphorus. The other plant is located at Monsanto, Tenn.

Oiling, Repairing and Adjusting Cranes

UNSAFE practices in oiling, adjusting and repairing cranes result in a large proportion of the total injuries involving cranes on construction work, according to the National Safety Council, Chicago, Ill. Most of these injuries are caused by falling from the crane or getting the hands or clothing caught in moving parts. Inadequate cribbing accounts for many of the most serious accidents.

Rigid observance of three simple rules will prevent most of these injuries:

1. Never oil, adjust, or repair a crane while the engine is running, *unless it can be done in no other way.*
2. Exercise special care in climbing on or off the crane to oil, adjust or repair parts. Don't jump off the crane.
3. Use only substantial stable timber cribbing or steel supports designed for this purpose when dismantling or assembling booms or when performing similar work on cranes. Do *not* use oil drums, saw horses, or scantlings standing on end for this purpose.

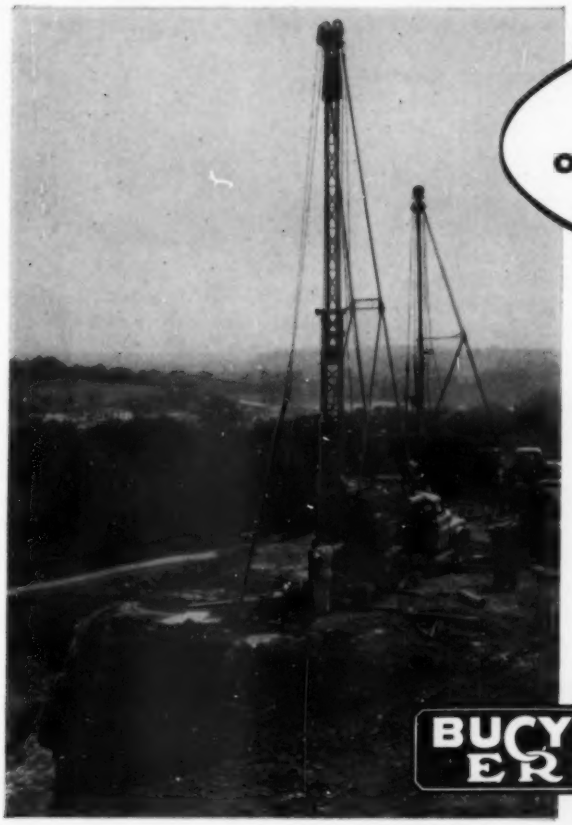
List Reasons

The first rule is simply common sense. Why take a chance on getting caught in moving parts if the engine does not have to be running while oiling, adjusting, or repairing is being done? This is a well accepted rule which applies to any and all machinery. Some adjustments, such as engine tune-up, can only be done while the engine is running. Hence, the phrase, ". . . unless it can be done in no other way."

The second rule applies, of course, to climbing on and off any equipment. However, it is especially important on cranes because many of the points at which oiling, adjusting and repair have to be done are well above the ground, and frequently are not easily accessible. Never *jump* off a crane unless it is a matter of life or death. The old-time seamen's rule of "one hand for the ship, and one for yourself" may often be a good rule to apply.

The third rule is not only a life or death matter to the man—failure to observe this rule often results in severe damage to the crane. Many a boom has been ruined and many a man crushed to death because inadequate cribbing was used. Insist on substantial cribbing!

By EARL W. WHEELER
Bureau of Yards and Docks
U.S. Navy



you can DOUBLE UP on Drilling Profits with a Bucyrus-Erie drill

Water wells? Blast holes? Makes no difference what the drilling job is . . . if there is money in it, *take* it. You can, you know, with a Bucyrus-Erie 20-W or 22-W cable tool drill.

These rigs drill fast, are dependable. They'll put down a 4- to 8-in. blast hole through toughest rock at surprisingly low cost per foot. And they have the spooling capacity — the fast line speeds — to handle water well jobs to a depth of 1,000 feet.

Let your Bucyrus-Erie distributor show you the many other reasons why these drills outsell all others two to one. Bucyrus-Erie Company, Drill Division, Richmond, Indiana, Dept. 13WC.

BUCYRUS ERIE®

Backed by the Best in Service

Equipment You Ought to Know About

1½-Yd. Tractor-Shovel

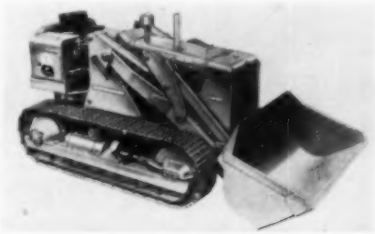
Manufacturer: Allis-Chalmers Mfg. Co., Department EE, Milwaukee 1, Wis.

Claims: A new 1½-yd. HD-6G tractor-shovel is now in production at Allis-Chalmers' Springfield (Ill.) works. It incorporates advanced design and engineering features which further increase the work capabilities, dependability, service simplicity and operator appeal of the unit.

An Allis-Chalmers 4-cycle diesel engine rated at 72 net hp powers the new tractor shovel. Four forward speeds from 1.5 to 5.5 mph and two reverse speeds of 2.0 and 4.1 mph may be selected with the single-lever shift located within easy, natural reach of the operator.

Dumping height of the new unit is over 9 feet. It has ample reach to get bucket loads out to the center of high-sided trucks or up and over the sides of excavations. The new curved bottom bucket tips back 40° at ground level, with 21,500 pounds of pry-out force at the cutting edge.

Shovel functions can be precisely controlled with the HD-6G's dependable hydraulic system that incorporates an especially designed, heavy-duty gear-type pump. Mounting the pump directly to the front end of the engine crankshaft has eliminated the conventional universal joints and drive shaft.



The new model provides outstanding operating ease and comfort. The operator steps aboard through the deck level gangway. He sits in a foam-padded armchair seat adjustable to his individual size and habits. Controls are grouped within his easy natural reach, and a 24-volt electrical push button starting system enables him to quickly get under way. A decelerator pedal and a built-in bucket level indicator further add to the operational ease of the unit.

Exceptional all-around visibility is featured in the new HD-6G. At the front, the new forward down-sloping hood design permits the operator to watch all bucket operations. At the rear, the tractor's slim fuel tank and stub fender design gives maximum visibility of the work area.

A wide variety of versatile optional attachments can be easily mounted quickly. Rear-mounted equipment includes hydraulic ripper and a backhoe. Front-mounted matched attachments include a rock bucket, rock fork, light

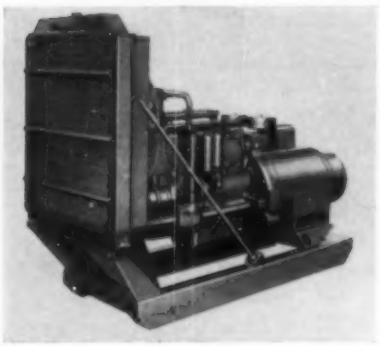
Continued on page 46

New Equipment . . .

Continued from page 45

materials bucket, lift tongs and lift forks, crane hook and straight and angling type dozers. These are mounted by simply knocking out and replacing four pins.

Light Plant



Manufacturer: Kohler Co., Department EE, Kohler, Wis.

Claims: To meet the ever-increasing requirements placed upon stand-by and emergency electric plants, Kohler has introduced a new large capacity unit. The model 100R81 is a 100-KW, 120/208 volt AC electric plant equipped for remote starting.

The new model is adaptable to practically all applications and voltage requirements featuring a 12 lead, reconnectible revolving field with static exciter. It is electrically cranked with an automotive type 12-volt starting battery. Voltage regulation is within plus or minus 2% frequency regulation, 3 cycles.

A 6-cylinder engine develops 220 hp at 1,800 rpm and is of heavy-duty design. Standard equipment includes vibro dampers, low oil pressure cutout and high water temperature safety device, anti-dieseling device for remote starting units, dual type oil filter, oil pressure gauge, muffler and oil bath air cleaner.

The model 100R81 is also available with 1,200 or 1,800 diesel engine.

Tamping Roller

Manufacturer: Chester Products, Inc., Department EE, Belle Ave., Hamilton, Ohio.

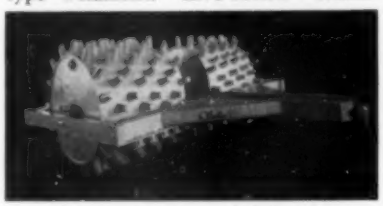
Claims: Production of completely redesigned model 6060 tamping roller has been started in Chester's newly located and enlarged factory at Hamilton, Ohio.

This giant of the Chester line, known as the Big Sixty, is the heaviest tamping roller in its class. It has a drum diameter of 60 inches and a width of 60 inches with 120 feet per drum. New design provides more effective compaction, better dirt removal between feet and easier handling in operation.

Cone-type feet of forged steel have been adopted to prevent scuffing or dragging compacted lifts. Ends of the feet are flat with a bearing surface of 7 square inches per foot to achieve maximum compactive effort. Optional wedge, round or sheep-type feet are available.

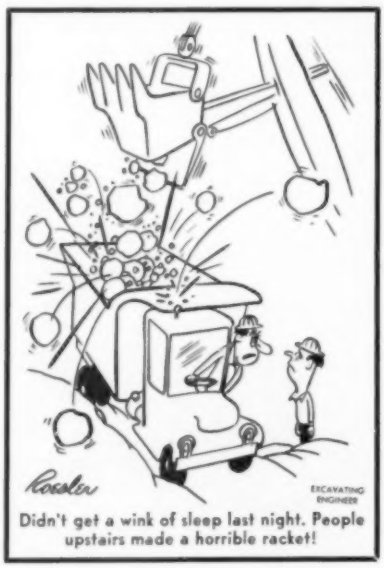
Wedge-spade type cleaner bars have been developed for positive dirt removal between the feet. Standard on front and rear, they are constructed of square bar steel angled to conform with drum surfaces in an effective cleaning position.

Short-turn frames have been designed for easier handling at cramped corners by reducing the size of the angular tongue bracing in the channel type weldment. "Live-action" oscilla-



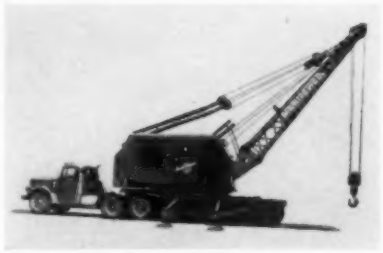
tion for compaction of lift edges or depressions is provided by the two drum frames linked together with a heavy duty hinge-pin assembly.

Easier access for filling or removing ballast is afforded by a large size screw-type fitting welded into the outside head of each drum.



Didn't get a wink of sleep last night. People upstairs made a horrible racket!

Mobile Crane



Manufacturer: Manitowoc Engineering Corp., Department EE, Manitowoc, Wis.

Claims: Newest addition to the Manitowoc line is the model 3500-TC mobile crane with a rated 65 to 80-ton capacity. In its size range, the new unit offers greater lift capacity than a crawler crane, plus mobility.

Transportable over the highway, the weight of the crane is spread over five axles to meet legal load restrictions. Removable counterweight also reduces the weight factor. Most truck tractors can be combined with the Talbert-built mobile crane mount. For especially rough going in muck or soft ground, the operator can use the added traction of the rear wheels which are powered directly by the crane engine. For highway travel, this linkage is safely locked in neutral and the rear wheels roll freely.

Features include torque converter; smooth acting disc-type clutches; and 84-in. diameter heat-treated roller path with six heavy-duty hook rollers. Independent boom hoist is worm-gear driven. It has power raising or lowering and is especially desirable for erection work, concrete setting or pile driving.

The Talbert-built crane mount features a strong, rigid frame; excellent suspension system reducing shocks and jars; safe, positive air brakes; and sturdy "wing" type outriggers.

Optional on the 3500-TC are air controls; a third drum for pile driving and specialized jobs; and exclusive "sectional" jibs which can be lengthened with 10-ft. increments to a total length of 50 feet.

Trailer Hitch

Manufacturer: Western Unit Corp., Department EE, 17747 E. Railroad St., City of Industry, Calif.

Claims: A new shockless trailer hitch, known as the "Safelock," is engineered for all type hauling work on or off the highway.

The Safelock hitch makes use of an

Continued on page 51

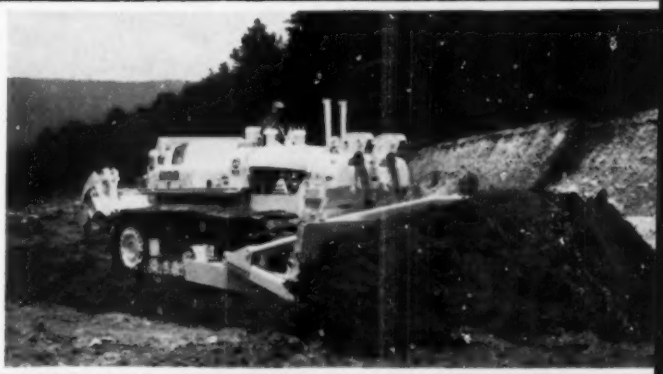
For a bidding advantage on that next job...

CHECK EUCLID'S BIG 3

World's most powerful tractor . . . two engines deliver 425 net h.p. to power trains . . . separate Torqmatic Drives and full power shift . . . independent track drives . . . 27" standard shoes . . . 8 track rollers . . . fast, easy operation . . . excellent accessibility for servicing.

Unequalled work-ability for push-loading big scrapers, bulldozing and ripping earth, rock, coal and ore, towing heavy equipment and other big tractor jobs.

TC-12
TWIN-POWER CRAWLER



All-wheel drive . . . two engines with a total of 563 h.p. . . . each with separate Torqmatic Drive . . . 24 yds. struck . . . 32 yds. heaped . . . independent hydraulic controls . . . No-Spin differentials . . . 27.00 x 33 tires with 33.5 x 33 optional.

Moves the cheapest dirt on big, tough jobs as well as small yardage projects . . . works under adverse conditions that stop other scrapers.

TS-24
"TWIN" SCRAPER

30 cu. yds. heaped . . . 21 yds. struck . . . 336 h.p. engine . . . 4-speed Torqmatic Drive with converter lock-up . . . independent hydraulic controls for bowl, apron and ejector . . . structural strength for push-loading by biggest tractors . . . exceptional service accessibility.

Years-ahead design with proved productive capacity that outperforms every other big scraper in its class . . . dependability that cuts downtime and maintenance costs.

S-18
SINGLE ENGINE SCRAPER

EUCLID Division of General Motors, Cleveland 17, Ohio

Big Power...Big Capacity...Big Performance for Bigger Return on Investment!

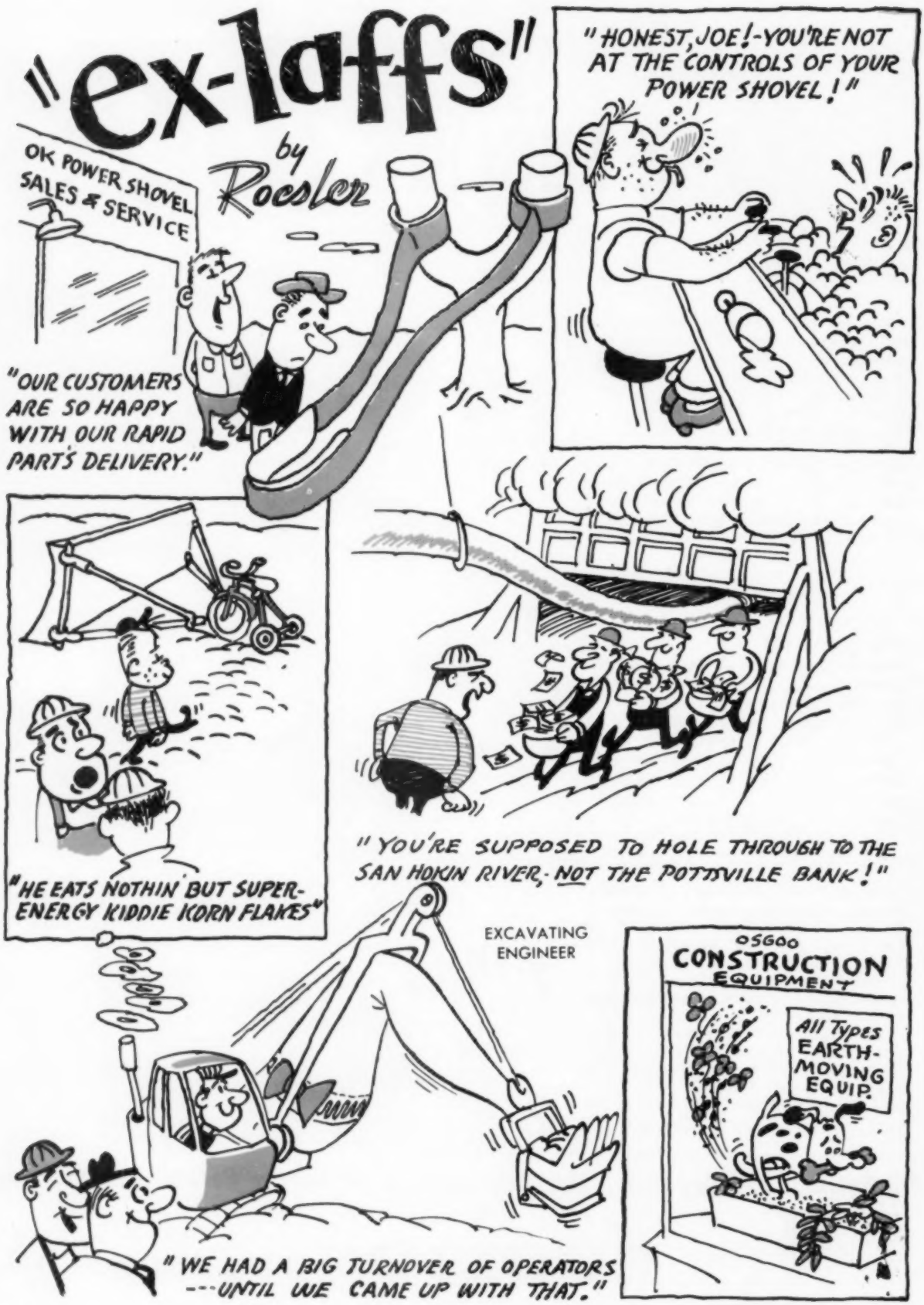
GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

"ex-laffs"

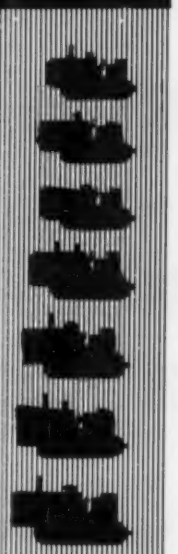
by Roesler


OK POWER SHOVEL SALES & SERVICE
"OUR CUSTOMERS ARE SO HAPPY WITH OUR RAPID PART'S DELIVERY."
"HONEST, JOE! - YOU'RE NOT AT THE CONTROLS OF YOUR POWER SHOVEL!"
"HE EATS NOTHIN' BUT SUPER-ENERGY KIDDIE KORN FLAKES"
"YOU'RE SUPPOSED TO HOLE THROUGH TO THE SAN HOKIN RIVER, NOT THE POTTSVILLE BANK!"
EXCAVATING ENGINEER
OSGOO CONSTRUCTION EQUIPMENT
All Types EARTH-MOVING EQUIP.
"WE HAD A BIG TURNOVER OF OPERATORS ---UNTIL WE CAME UP WITH THAT."

COMPARE THE NEW
EIMCO 123
FRONT END LOADER! CHECK THE **FACTS**

NOT THE CLAIMS

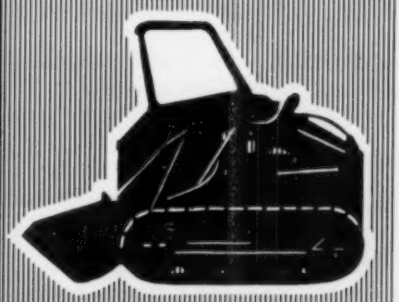
	EIMCO 103	CAT D-4	CAT D-6	AC HD-6	AC HD-11	INT. TD-9	INT. TD-15	CASE 1000
Maximum Drawbar Pull, Pounds (zero track slippage)	33,600	10,700	19,080	15,485	21,980	13,340	23,730	24,000
Torque Converter	Yes	No	No	No	No	No	No	Yes
Master Clutch	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Power shift transmission on all speeds, with all-sealed metallic clutches that never need adjustment	Yes	No	No	No	No	No	No	No
Independently reversible track	Yes	No	No	No	No	No	No	Yes
Hydraulic track take-up	Yes	No	No	No	No	No	No	Yes
Heat-treated alloy steel grouser shoes, keyed to the track links	Yes	No	No	No	No	No	No	No
One-piece heat-treated alloy steel track rollers, tapered roller bearings	Yes	No	No	No	No	No	No	No
Equalizer bar of heavy duty heat-treated cast alloy steel, allowing full oscillation of crawler tracks with all attachments	Yes	No	No	No	No	No	No	No
Constantly running power take-off drives, front and rear, to standard SAE specs, with rear take-off not affected by track operation, and independent hydraulic pump drive allowing simultaneous use of hydraulic, winch and hoist accessories	Yes	No	No	No	No	No	No	No
Front operator's seat for full visibility	Yes	No	No	No	No	No	No	No
Ability to operate forward and backward on up to 90% slopes	Yes	No	No	No	No	No	No	No
Tractor guaranteed for one full year of single shift service	Yes	No	No	No	No	No	No	No



FOR PROOF OF EIMCO 123 SUPERIORITY

FRONT END LOADERS	EIMCO 123	CAT 955	CAT 977	AC HD5G	AC HD11G	INT. 9K3	INT. 15K3	CASE 1000
WEIGHT, POUNDS	25,000	22,470	34,915	19,600	32,000	19,985	33,235	21,800
ROCK BUCKET, CU. YARDS	1¾	1.1	1.8	1½	2¼	1½	2½	N.A
ENGINE HP	100	70	100	72	111	71	115	100
TRACK GAUGE, INCHES	60	60	74	60	74	60	74	60
SHOE WIDTH, INCHES	17	15	18	13	16	15	18	16
LENGTH OF TRACK, INCHES	88	81⅛	105⅝	83⅝	106¾	75	98½	79
TRACK AREA, SQ. INCHES	3,000	2,450	3,814	2,180	3,410	2,250	3,546	2,330
GROUND PRESSURE, PSI.	8.3	9.2	9.2	9.0	9.4	8.9	9.4	8.6
LIFT HEIGHT TO HINGE PIN, INCHES	144	128	144	120	139	125	144	134
DUMP HEIGHT, INCHES	115	100	114	96	114	102	113	101
DUMP REACH, INCHES	44	38¾	39	31	37	26	37	40
MAX. DUMP ANGLE, DEGREES	63	50	50	45	52	60	50	50
MAX. PUMP PRESSURE, PSI	1,200	1,450	1,450	1,000	1,300	1,500	1,750	1,450
PUMP, GPM	75	43	52.5	39	72	N.A	N.A	50
LIFT TIME, SEC.	7.5	7.0	9.1	9.0	9.0	7.7	9.0	7.5
DUMP TIME, SEC.	3.0	4.0	5.0	4.0	4.0	N.A	N.A	1.6
GROUND CLEARANCE, INCHES	17	13⅝	19¼	11⅜	13⅜	9	10	16

N.A. — not available



Information is from manufacturer's data and other sources believed to be reliable, but cannot be guaranteed.

IT'S A FACT . . . not a claim . . . that here is a MODERN line of tractors that makes all other crawler-tractors old-fashioned!

Other exclusive features includes Unitized "Stress Flow" Construction, for far greater strength and rigidity; Self-cleaning Air Cleaner that completely eliminates ordinary routine cleaner maintenance and others, far too numerous to list here. Write for details and specifications on all the advanced engineering features of the modern Eimco 103 line of crawler tractors.

AVAILABLE IN FOLLOWING MODELS:

103 — TRACTOR AND DOZER
123 — FRONT END LOADER
133 — STEEL MILL FEL
143 — LOG LOADER

"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

THE EIMCO CORPORATION

EXPORT OFFICE: 51 - 52 SOUTH STREET, NEW YORK, N. Y.
BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

EIMCO

TRACTOR LOADER DIVISION
634 SOUTH 4TH WEST
SALT LAKE CITY, UTAH — U.S.A.

B - 454

HERE ARE 3 GOOD REASONS FOR BUYING A BUCYRUS-ERIE BUCKET NOW!

1. Bucyrus-Erie buckets have a KNIFE ACTION that cuts through material fast and easy.

2. BOIL ACTION design of the bucket and cutting edges moves dirt back into the bowl effectively, fills a heaped load on every pass.

3. A special alloy developed by Bucyrus-Erie makes these buckets last longer. It is tough, with high impact strength, and greater resistance to skid wear.

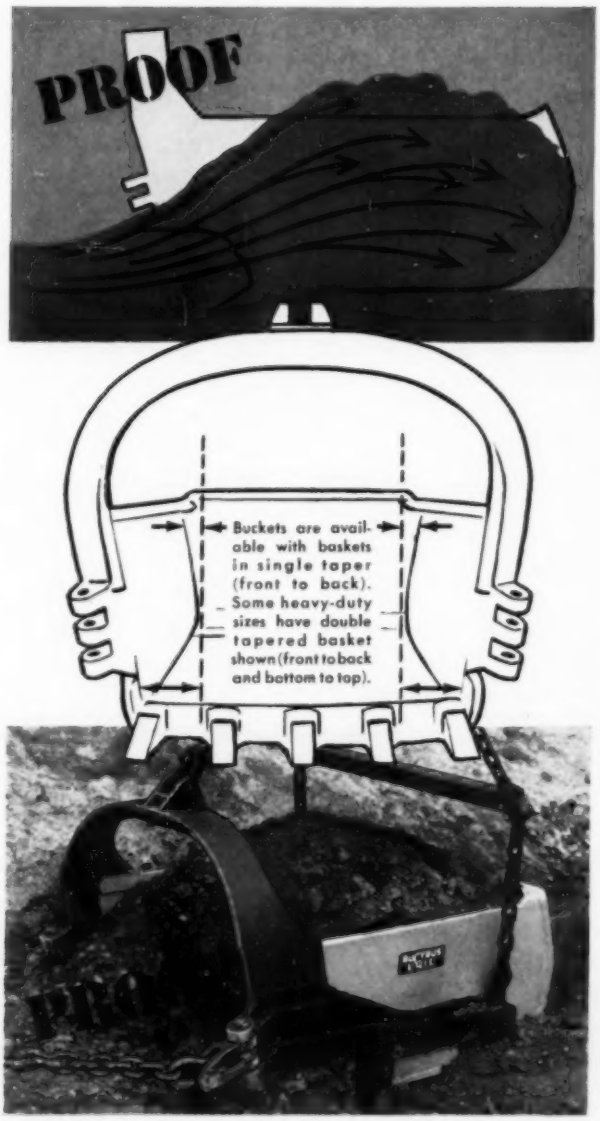
Enjoy extra profits with a new Bucyrus-Erie dragline bucket. Size for size, you'll move *extra yardage.* Make the change *now!* See your Bucyrus-Erie distributor, or write Bucyrus-Erie Company, South Milwaukee, Wis., Dept. 2R.

BUCYRUS ERIE®

Builds Better Equipment

THIS SERRATED EDGE is thinner than the base for high-speed "slice action" digging.

Below: **BOIL ACTION** fills bucket every pass.


PROOF
Buckets are available with baskets in single taper (front to back). Some heavy-duty sizes have double tapered basket shown (front to back and bottom to top).

New Equipment . . .

Continued from page 46

air or vacuum system that holds the pintle eye firmly in the coupling, eliminating rattling and shock. Although held secure, there is sufficient freedom of movement of the pintle eye in the coupling to allow the trailer to easily follow the towing vehicle.

When coupling up to hitch, the drawbar triggers the top latch and automatically locks the drawbar within the hitch.

After air is released, the hitch will remain in uncoupled position. The drawbar eye is held in raised position so it slips over the pintle. This allows the driver to easily pull away from the trailer without additional effort on his part.

The hitch is a complete unit ready to install on any type truck, and can be used to replace non-shockless type hitches. The unit, complete with air chambers, weighs approximately 38 pounds and requires only four bolts for easy installation.

Self-Propelled Scraper

Manufacturer: LeTourneau-Westinghouse Co., Department EE, 2301 N.E. Adams St., Peoria, Ill.

Claims: A fast, high-production six-wheel self-propelled scraper has been introduced by LeTourneau-Westinghouse. Named the model C Speedpull, the machine teams a 20-yd. heaped-capacity Fullpak scraper with a 276-hp 4-wheel prime mover.

Unveiling of the Speedpull is the latest development in a complete upgrading of the LeTourneau-Westinghouse earth-moving line. It follows, by only a few weeks, the introduction of the firm's Haulpak trucks, announcement of increased horsepower in the B-sized Tournapull, and the introduction of new "full-sweep visibility" L-W motor graders.

Probably the most unusual design feature of the new scraper-prime-mover combination is Hydrair suspension of its front wheels. In this system, originally perfected by L-W for its new Haulpak trucks, each front wheel is mounted to a piston which operates inside a frame-mounted cylinder. Surrounding the piston is a circular chamber of oil, connected by tube to an oil reservoir inside the piston. As the wheel rolls along surface irregularities. the up-and-down motion of the piston forces oil in and out of the piston's reservoir. This, in turn, compresses and decompresses nitrogen gas contained above the oil reservoir, snubbing the overall movement of the piston and wheel, thus absorbing shocks and leveling the ride.

Other Tournapull features adapted to the Speedpull are electric control of scraper functions; the Fullpak scraper design; and the well-known LeTourneau-Westinghouse power-transfer differential. The differential uses a simple friction principle to automatically transfer up to 80% of engine power from a slipping drive wheel to the one on better footing.

Power plant for the Speedpull is a Cummins NHS-6-BI diesel engine, rated at 276 hp at 2,100 rpm at sea level, at 60° F. A heavy 16-in. double plate clutch is standard on the machine. The unit's step-gear transmission offers 10 forward speeds to 37.7 mph, and two reverse speeds to 3.7 mph. The transmission provides pressure filtration and pressure lubrication.

Several major contractors cooperated with LeTourneau-Westinghouse in job-testing the Speedpull. A pilot model of the machine was put into use late

Continued on page 52

FOR 50 YEARS...
Finest in the Field!
Rely on the bucket contractors rely on. The Omaha Dragline Bucket gives full load with every cast. Perfect balance makes it easy to spot dump. Alloy steel cutting teeth stay sharp, tough and ready. Strike pay dirt now! Complete information and specifications await your letter.
DRAKE-WILLIAMS MOUNT
• OMAHA, NEBR.
OMAHA
DRAGLINE BUCKETS

New Equipment . . .

Continued from page 51

in 1957, and worked throughout the 1958 work-season in various locations around the nation. Several additional models were placed on jobs at the start of the current season. In every instance, the company says, production and cost figures on the machine were "more than satisfactory."

Greatest use of the Speedpull is expected to be on jobs where one-way haul routes are over 2,000 feet long, and where haul conditions are good. While the unit is not expected to compare with Tournapulls in extreme maneuverability and traction, it will prove a greater income-producer, say its developers, on jobs meeting the above requirements.

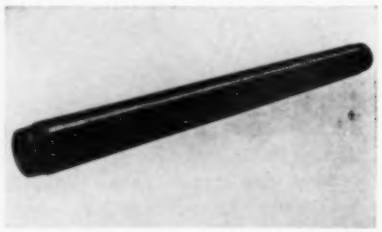
Fibre Pipe

Manufacturer: Line Material Industries, Department EE, McGraw-Edison Co., Milwaukee, 1, Wis.

Claims: L-M Permaline perforated fibre pipe for use on highway and airport underdrain is being manufactured by Line Material Industries. This pipe economically removes excess water from subgrades, reducing pavement failures. Highway and airport underdrain can also be used for parking lot drainage.

Permaline underdrain is available in diameters of 2, 3, 4, 5 and 6 inches, in lengths of 5, 8 and 10 feet, and 8-in. diameter in 5-ft. lengths.

Features that assure satisfactory performance in the field are high impact and crushing strength; lightweight; weather and erosion resistance; and chemical stability. Permaline underdrain can be connected to other types and sizes of pipe. One coupling is furnished



to each standard length, providing positive joints and tube alignment.

Use of the perforated fibre pipe as underdrain has been approved by Corps of Engineers for subdrains and meets all requirements of interim federal specifications SS-P-00358.

Heco Truck Cranes

Manufacturer: Hardwicke-Etter Co., Department EE, Sherman, Texas.

Claims: Maximum stability and extra lifting capacity are combined in two new Heco cranes. They are the model RM-437 and model RM-500. Rated at 9 tons and 11 tons respectively as cranes, the units have ⅜ and ½-yd. excavator capacity.

The cranes are rubber-mounted on a rugged carrier which has solid H-beam frames, and features Budd 10-hole interchangeable disc wheels, air brakes, six-wheel drive, 32,000-lb. rear axle and 11,000-lb. front axle. The 40,000-lb. rubber mounted rear axle suspension requires no greasing.

Anti-friction bearings are used throughout the machines. Clutch band engaging arms ride on pre-packed needle bearings.

Heco furnishes torque converter drive as standard equipment, along with 20-in. diameter brakes and clutches

Continued on page 54

9 years of field service prove safety and long life of Fatigue-resistant USS Tiger Brand Boom Support Assemblies

Nine years ago, American Steel & Wire Division introduced a *fatigue-resistant* Tiger Brand Wire Rope Boom Support Assembly. It was designed to combat the severe vibration on power shovels, draglines and cranes. Since then, it has been installed on thousands of machines with outstanding success.

Effectively dampens vibration. The spliced section gradually dampens vibration instead of concentrating it at one point. This results in greater safety and *much longer cable life.*

Visibility increases safety. With this construction, inspection is easy and the development of broken wires is readily detected. They are not hidden in a shank or socket basket. Thus, you can tell when to replace the assembly in time to prevent accidents.

Easy application. There's no need for extensive alteration of your present equipment. Tiger Brand Wire Rope Boom Support Assemblies are made with standard-size fittings. These are completely interchangeable on standard equipment. For further information, contact our nearest office or write American Steel & Wire, Dept. 9222, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

Greater safety—20% longer service life was obtained from these Tiger Brand Boom Support Assemblies used on a crane owned by the Hunkin & Conkey Construction Co. in Ohio.

Vibration is effectively dampened by these Tiger Brand Boom Pendants with spliced ends. The splice can be readily inspected for broken wires—an added safety factor.

American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad

HEADQUARTERS FOR YOUR BEST BUYS IN USED EQUIPMENT!

Your Caterpillar Dealer's lot holds the best selection of used earthmoving equipment buys on the market. Here's why: His business is active—and he reconditions, classifies and guarantees his trade-ins so you *know* what you're getting. Here's how:

BONDED BUY

1 **A "BONDED BUY"** on used Cat-built equipment is your safest buy. It's a bonded guarantee, up to $10,000 of satisfactory performance on *all* parts during the guarantee period.

2 **A "CERTIFIED BUY"** covers units of any make in good condition. This type of protection carries your dealer's written guarantee of satisfactory performance.

3 **A "BUY AND TRY"** deal is just what its name implies. This protects you with your dealer's written money-back agreement.

Only Caterpillar Dealers offer this protection. You'll find your dealer listed in the Yellow Pages. For your best buys in used equipment, visit his lot today!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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BEST BUYS IN NEW AND USED EQUIPMENT

New Equipment . . .

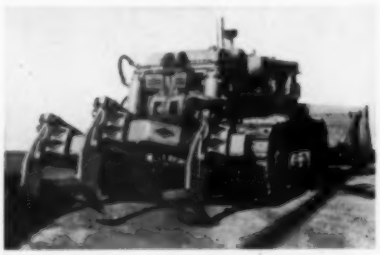
Continued from page 52

which are interchangeable and air cooled.

Stability is assured at all working angles by double oscillating conical rollers of heat-treated alloy steel.

All wheels are interchangeable so only one spare is required. The pin-connected boom permits rapid erection.

Rock Ripper



Manufacturer: American Tractor Equipment Co., Department EE, 9131 San Leandro Blvd., Oakland 3, Calif.

Claims: Designed specifically for Caterpillar D8 series H tractors, a heavy-duty tractor mounted rock ripper is now in production by Ateco. The ripper is available in two models. Model HR48-D8H has an offset tool beam with ample clearance for mounting on tractors equipped with No. 29 rear cable control. Model HR-D8H has the standard straight tool beam.

Both models will rip with one, two or three shanks to a maximum depth of 48 inches. Straight or curved shanks for 25, 42 or 48-in. ripping depths are available. Shanks are equipped with replaceable points.

Features include a "beefed-up" tool beam 11 x 12⅝ inches made of 1½-in. plate box welded and internally reinforced. Extra clearance under the tool beam (14 inches minimum when ripping) prevents clogging. Cylinders are 30% larger, with 40% heavier rods than previous D8 ripper models.

Two-Way Radios

Manufacturer: General Electric Co., Communication Products, Department EE, Lynchburg, Va.

Claims: General Electric has unveiled an advance design of transistorized two-way radio equipment containing the highest powered transistorized models, the smallest sizes and the lowest battery drain ever to be made commercially available in the mobile communications field.

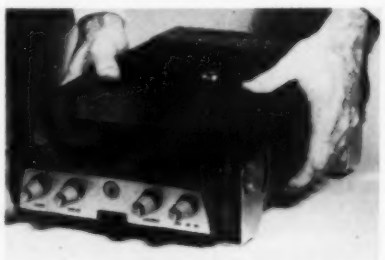
To be marketed immediately, the equipment has been designated as the General Electric Transistorized Progress Line. It will be available in units up to 75 watts—the highest output achieved to date in transistorized communications.

From the 75-watt category, the new line ranges downward to 30 and 10-watt units in sizes as small as 8⅝ inches wide, 12 inches long and four inches high. Even with the size reduction, the units outperform larger conventional models.

The line contains the fewest tubes of any mobile radio equipment now marketed, it is claimed. Only three tubes are used in lower wattage categories and four in 30 and 75 watt models.

The first units to come off the production line will be manufactured for use in 150-174 mc.

Units will be available in both narrow band for new licensees, and wide band, for replacement use in existing communication systems where desired. The latter is engineered for economical and easy conversion to narrow band, with only six coil IF strips needing replacement when the user makes his decision to convert.

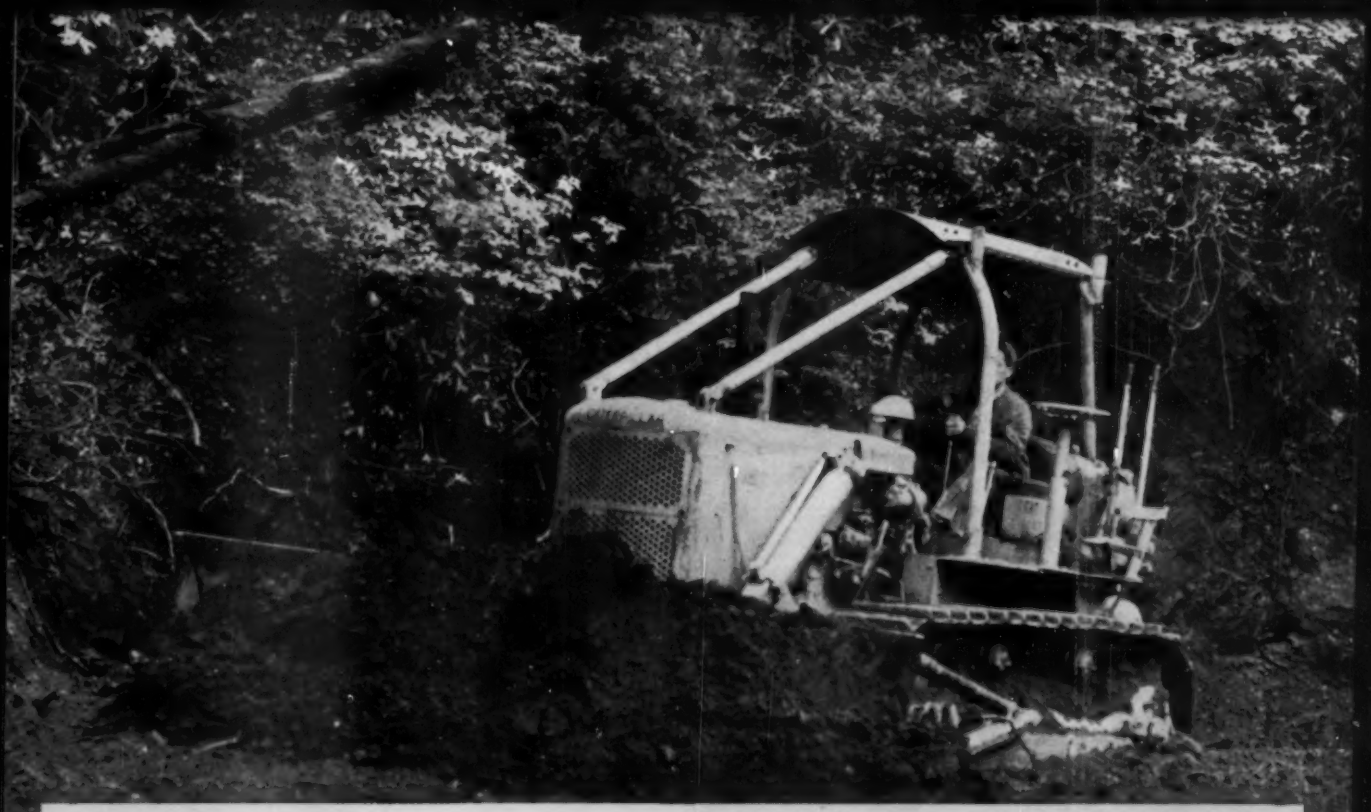


The equipment has provisions for either 12-volt or 24/12-volt power supplies. All units are interchangeable for negative to positive ground. This is important particularly to large fleet users of two-way radio who may have an inter-mixture of vehicles of several manufacturers without common voltages or ground polarity.

Two-frequency operation is a stand-

Continued on page 56

"Did you just go, baa - - ?"



D6 builds mountain road to Portland Reservoir

Portland, Oregon, gets its supply of pure, soft mountain water from the Bull Run River . . . 30 miles east of the city. The river has its source in Bull Run Lake near the summit of the Cascades . . . elevation 3,175 feet. The uninhabited, 218-square-mile area is heavily-timbered, rugged terrain. To repair a dam at Bull Run Lake required carving out 5 miles of new road.

A Caterpillar D6 Tractor with a No. 6A Bulldozer and a Hyster donkey did the job . . . rough grading, ditching, clearing boulders, skidding logs, spreading crushed rock. All this plus general maintenance jobs such as winching logs from the lake and river.

The versatile D6 outworks any tractor in its size range. It combines high production with low operating and maintenance costs.

The 93 horsepower Caterpillar Engine delivers the push and pull to make the hard work easy; the engine's foul-proof fuel system runs on economy-type diesel fuels.

The D6 is fast . . . speeds up to 6.6 MPH . . . and easy to operate. A hydraulic unit takes the effort out of steering, helps the operator work at top efficiency.

The exclusive Caterpillar oil clutch goes up to 2,000 hours—one whole season—without adjustment. When other type clutches need *replacing*, a Caterpillar oil clutch may need an *adjustment*.

All of these features on the D6 combine to give you a profitable return on every dollar invested. And for added versatility . . . there's a complete line of attachments for the D6.

You could be missing out on a machine valuable to your operation. A demonstration on your job will show you why the D6 is the work horse on so many earthmoving jobs. Call your Caterpillar Dealer soon. He'll give you the full story . . . top production facts and figures.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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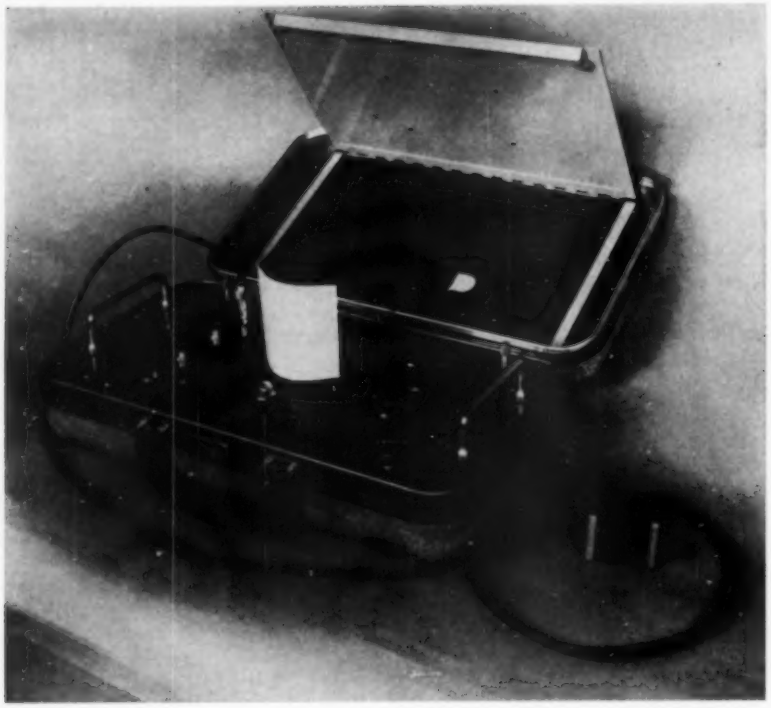
HIGH-QUALITY MACHINES WITH A LOW FINAL COST



New Equipment . . .

Continued from page 54

ard option, providing one or two frequency transmit and/or receive.

The new line also includes a full range of accessories and provides for various types of optional equipment.

Blastcorder

Manufacturer: Geotechnical Corp., Department EE, P.O. Box 28277, Dallas 28, Tex.

Claims: Immediate vibration-intensity records and a meter reading are provided by the new portable Blastcorder. Blasters themselves can operate this field instrument to help control blasting within safe limits.

Easily demonstrated to homeowners to maintain good community relations, the Blastcorder helps avoid costly delays and law suits. The routine maintenance of Blastcorder records can provide an expert with valuable evidence with which to defend the blaster if litigation develops.

The instrument indicates or records the peak acceleration of ground or structural vibrations. Knowing acceleration, blasters may either refer to the United States Bureau of Mines damage-safety index, or derive an index based upon local practice.

The Blastcorder is self-contained, battery powered, protected by a tough Fiberglas case, weighs about 20 pounds, and is 6 x 12 x 19 inches in size. One, two or three pickups may be used. Acceleration is retained by a memory circuit and indicated on the meter—the operator may then press a button to print the acceleration on the economical 4 x 6 record placed in the slot. Spaces are provided on the reproducible record for the blaster to enter operational data.

Track Adjusters

Manufacturer: Caterpillar Tractor Co., Department EE, Peoria, Ill.

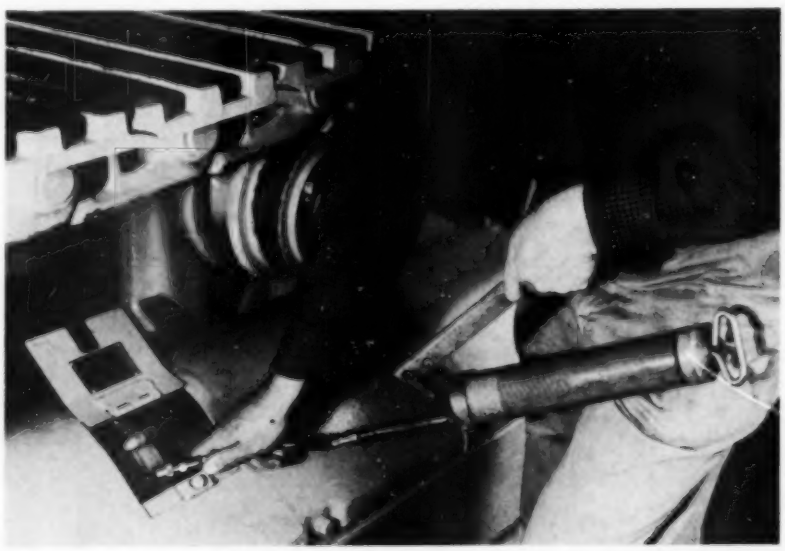
Claims: Increased ease of track adjustment on three Caterpillar-built crawlers has been announced, with the introduction of hydraulic track adjusters as attachments for the Caterpillar D4 and D6 tractors, and No. 977 Traxcavators.

Previously introduced on Caterpillar's three largest track-type tractors, the new adjusters allow track tension to be adjusted with a standard hand-operated grease gun, and replace the former bolt-and-wrench system. Caterpillar claims prolonged track life as a benefit, since the new easier method encourages operators to correct track tension at proper intervals.

Improved bulldozer blades also have been announced for two models of Caterpillar-built tractors.

One is an angling blade for the No. 955 Traxcavator, designated the No. 955A angling bulldozer. Available for both series C and series E machines, it incorporates screw-type tilt braces in place of the former cast, serrated tooth adjustment. Benefits of this feature are easier, quicker adjustment and more rigid positioning of the blade. The over-all blade width has been increased by 9 inches, to 10 feet 2⅛ inches; also, a stronger, wider C frame is used. Weight of both blade and C frame has been upped to 2,090 pounds.

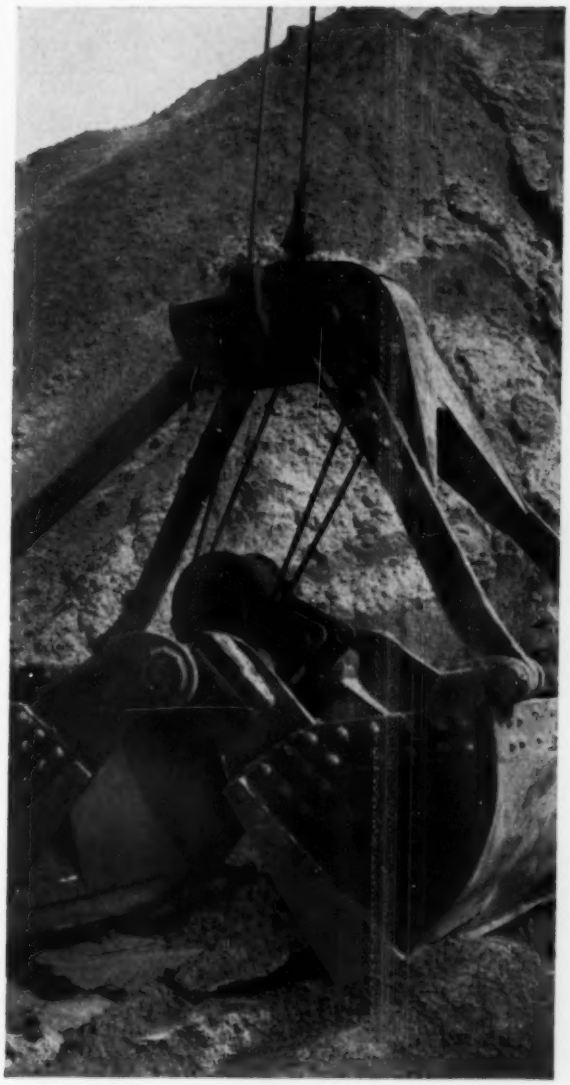
A new No. 4A bulldozer has been provided for both the 44 and 60-in. gauge D4 tractors, also using the screw-type tilt braces. Strength of the C frame has been increased not only by the tilt-brace change, but also by replacement of the former angling pin by redesigned angling brackets mounted on top of the C frame.



Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristics.

Heavier outside wires in each strand have greater resistance to abrasion.



"Herringbone* saves our equipment"

AMICO SAND AND GRAVEL COMPANY

Read this about the most exciting wire rope development in years . . . "Turning a profit on any product often boils down to something that will do a specific job better than anything else. Our equipment operators prefer Roebling Herringbone to any other for heavy lifts, clam shell, drag, pan work or dozers. The savings on sheaves, because of Herringbone's perfect tracking, are a big item as far as we are concerned."

Amico Sand and Gravel Company, Morrisville, Pennsylvania, and Riverside, New Jersey, has told you what this combined regular lay and Lang lay rope—two-ropes-in-one—is doing for them. Roebling is in a position to *show* you how the new Herringbone can, again, in the words of Amico ". . . give you a chance to turn more profit on production equipment." Write to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for the full and fabulous facts.

*Reg. App. For

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

ROEBLING
HERRINGBONE
WIRE ROPE

NOT in the Contract

Weatherman to radio announcer: "Better break it to 'em gently. Just say 'Partly cloudy, with scattered showers followed by a hurricane.' "

A teacher noticed that one little boy was drawing everything in black crayon. He drew black horses, black cows and black barns. Disturbed about what was going on in his mind, she called a meeting of the little boy's parents, the principal of the school and a psychiatrist.

They finally got to the root of the matter—it was the only crayon he had.

You haven't had a real hangover until you can't stand the noise made by a Bromo-Seltzer.

A drunk came home without his pay and his wife asked him what he spent it for. He thought awhile and said: "I bought something for the house."

"What," she asked sarcastically, "did you buy for the house?"

"Twelve rounds of drinks."

A man rushed into the newspaper office and demanded to see the editor. "Sir," he cried as he walked around the room, "your paper has libeled me. You have called me the lightweight champion."

"But that is true," returned the editor. "You are Mr. Fightwell, aren't you?"

"Yes, yes," cried the other, "but it's my brother who is the boxer. I'm a coal merchant."

An off-beat psychiatrist we heard about advertises: "Satisfaction guaranteed or your mania back."

"Litterbug!"

EXCAVATING ENGINEER

Lawyer: "Here's my bill for services. You can pay me $500 down and the balance at $60 per month for 24 months."

Small contractor: "Sounds like buying an automobile."

Lawyer: "I am."

A pretty young hillbilly girl caught the eye of a visiting construction worker. He wooed her, won her and married her in a few short weeks, and her wedding night in the nearest large city was the first time she had ever left her native hills.

On the threshold of the bridal suite, the girl suddenly blushed and hung back.

"What's the matter, darling?" asked the groom.

"Oh, nothin'," she replied. "It's jist that this hyer room has two beds in it, and I'd sorter hoped we'd git a room to ourselves . . ."

A six-year-old boy, separated from his mother in a supermarket, began to call frantically for "Martha! Martha! Martha!"

That was his mother's name and she came running to him quickly. "But, honey," she admonished, "you shouldn't call me Martha! I'm 'Mother' to you."

"Yes, I know," he answered, "but this store is full of mothers."

Two perky old ladies were preparing to board an airliner. One of them turned to the pilot and said, "Now young man, please don't travel faster than sound. We want to talk."

A man, down on his luck reached the point where he didn't even have a nickel for the pay toilet. A friendly bartender loaned him the coin. As he entered the men's room, another fellow was emerging from a pay booth and held the door open. Later, still having his nickel, the man saw a slot machine, put the nickel in and hit the jackpot. With the $5 he went to see a bookie, parlayed his bets and that evening had over $1,000. Investing this money in some mining stock, he returned to see the bartender a few months later with a fortune of over $50,000.

"Don't you think I'm entitled to half the profits?" asked the bartender. "I gave you the nickel that started it all."

"Give you half?" exclaimed the big winner. "The fellow who should get half is the guy who held the door open for me!"

This Cat No. 12 Motor Grader is undercutting banks down 28 inches deep in St. Anthony Village, Minnesota. Cutting both sides, it averages about 8 blocks a 10-hour day in compacted hardpan. Owner: J. A. Denens & Son, Inc., Minneapolis, Minn.

LOOK! THESE IMPROVEMENTS IN THE No. 12 PAY OFF IN EVEN HIGHER PRODUCTION!

Increased throat clearance and final drive **New blade, lift and circle** **New, two-tooth power control clutches** **One-piece case for transmission** **New, positive mechanical lock**

SINCE it was introduced twenty-one years ago, the Caterpillar No. 12 Motor Grader has earned the title "standard of the industry." Constant improvements have kept it the undisputed leader in its class. Here are the latest improvements that enable you to get even more work at lower cost with less maintenance from this high-production machine:

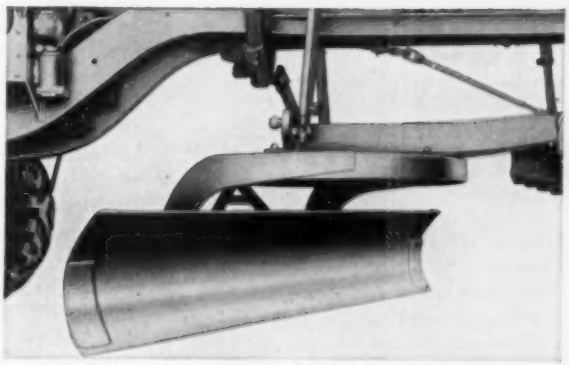
1 Clearance between the top edge of the blade and bottom edge of the circle has been increased to 5 INCHES. This provides improved rolling action, allows more material to move across the blade for greater production.

2 Blade thickness has been increased to 7/8 inch and blade beams have been increased in length and thickness to handle heavier loads. Lift arms have been lengthened and links shortened to enable operator to obtain all blade angles more easily. Circle reverse gear housing has been redesigned for better clearance as well as to increase the life of components and make service adjustments easier.

3 There's a new, stronger one-piece case for the transmission and final drive. This eliminates possible leakage at gaskets. In addition, transmission bearings have been strengthened for longer gear life.

4 New mechanical controls for reduced kickback, easier engagement. New power control clutches have two teeth, instead of four, and improved contact angles. They are more positive to engage, easier to hold in position.

5 New blade controls feature a positive mechanical lock—exclusive with Caterpillar. When the control is in neutral, the power shaft is locked by a set of gear teeth to prevent creeping.



See the improved No. 12 at your Caterpillar Dealer. Whatever the job, he has the right capacity motor grader for it. Besides the 115 HP No. 12, there's the big new 150 HP No. 14 and 75 HP No. 112. Ask for a demonstration!

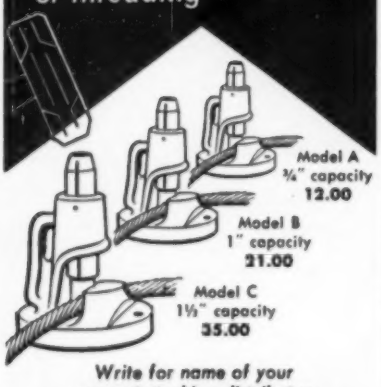
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

STEP UP PRODUCTION WITH THE IMPROVED No. 12

WITH A HAMMERBLOW . . . 3 SHARP RAPS CUT WIRE ROPE CLEAN . . . *leave it round, ready for splicing or threading*



Write for name of your nearest stocking distributor

HAMMERBLOW
WIRE ROPE CUTTER CO.
9 Proffit Ave., Springfield, N. J., DRexel 6-4767

New Trade Literature

Subject: **Off-Highway Trucks**

Content: LeTourneau-Westinghouse's Haulpak line of trucks is featured in a 24-page brochure. The catalog, well illustrated by photographs and diagrams, points out in detail the design and operational features of the 27-ton and 32-ton end-dumps and the 80-ton bottom-dump Haulpak haulers which were announced by the company June 1. The Haulpak line features Hydrair (air-hydraulic) suspension, high capacity "V" frame and body, multiple breaking system, earthmoving-type final drives, aerodynamic "power-miser" fan and a "sealed-for-life" bearing system.

Where to get: L-W distributors or LeTourneau-Westinghouse Co., Department EE, 2301 N.E. Adams St., Peoria, Ill.

Subject: **Motor Graders**

Content: An eight-page Caterpillar booklet, *Top Performers*, describes the main features of the company's three motor graders. The 150-hp Cat No. 14 is cited for its turbocharger, high clearance moldboard, dry-type air cleaner, oil clutch and other features. The No. 12, with 115-hp, is detailed as "a favorite for two decades." Low investment for high utility and economy is emphasized for the 75-hp No. 112. Ask for form DE-14.

Where to get: Advertising Div., Department EE, Caterpillar Tractor Co., Peoria, Ill.

Subject: **Electric Blasting**

Content: *Handbook of Electric Blasting* is a new Atlas booklet written by David M. McFarland and Guy F. Rolland. McFarland, manager of the Atlas explosives division technical customer service section since 1934, is widely known as "the father of millisecond delay blasting." Rolland was for more than 10 years director of the Reynolds Experimental Laboratory, and is now assistant to the director of research, explosives division. The 60-page handbook makes plain, for novice or experienced blaster, the whys and hows of effective electric blast detonation. Technical terms are explained in such a way as to give the beginner in electricity sufficient knowledge to enable him to use electric blasting successfully. Among the subjects covered are the advantages of electric blasting over old methods, the nature and construction of an electric blasting cap, and the sources of power for electric blasting. Tables and graphs are given for current delivered by standard blasting machines, resistance of copper wire and caps, and electric blasting circuits. The book describes and illustrates methods of splicing wires, testing circuits, checking current leakage, and the use of rheostats. It is sturdily bound for hard use, and is small enough to fit in a pocket, so that it may be taken out on the job for quick reference.

Where to get: Explosives Div., Department EE, Atlas Powder Co., Wilmington 99, Del.

Subject: **Durolite Blocks**

Content: A new Sauerman catalog contains complete specifications including tonnage capacities and recommended wire rope sizes for Sauerman Durolite blocks and sheaves. Durolites are stocked in sizes from 6 to 18 inches with bronze bearings, and from 8 to 42 inches with roller bearings. Special blocks are also available. A variety of these are illustrated in the catalog. Durolites are manufactured in capacities from 1-ton single blocks to 600-ton multiple sheave assemblies. Ask for catalog I.

Where to get: Sauerman Bros., Inc., Department EE, 622 S. 28th Ave., Bellwood, Ill.

Subject: **Concrete Finishers**

Content: Chain Belt has published two new bulletins—*Rex Finishers* (bulletin 59151) and *Rex Longitudinal Float Finishers* (bulletin 59156). The first bulletin illustrates how Rex finishers can finish concrete surfaces faster, more efficiently and economically through such features as power frame widening; quick and easy crown changes; hydraulic screed positioning; and a working speed range totaling 48 different combinations. The second bulletin on Rex longitudinal float finishers is an introduction to a new concept in roadbuilding machinery design. It outlines the advantages of tubular construction including greater unit strength and the elimination of sagging, deflection and weaving on forms. It also points out the simple transportability feature and how it results in greater speed on the job and greater handling ease between jobs.

Where to get: Chain Belt Co., Department EE, Milwaukee 1, Wis.

New Movies . . .

Subject: **Earthmoving History**

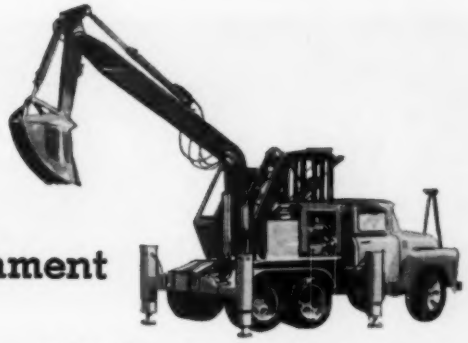
Content: Earthmoving methods before the machine age, and the story of earthmoving equipment from its inception to the present time, are highlighted in the new Allis-Chalmers 20-minute 16-mm motion picture, *Crawler Tractors In Action*. The movie takes the viewer to job locations and graphically illustrates the multitude of construction, earthmoving and material handling jobs the equipment can handle efficiently and economically.

Where to get: Allis-Chalmers Mfg. Co., Construction Machinery Div., Department EE, Milwaukee 1, Wis., or A-C branches and dealers.

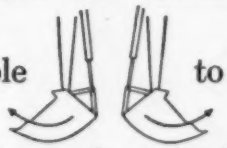
This is a

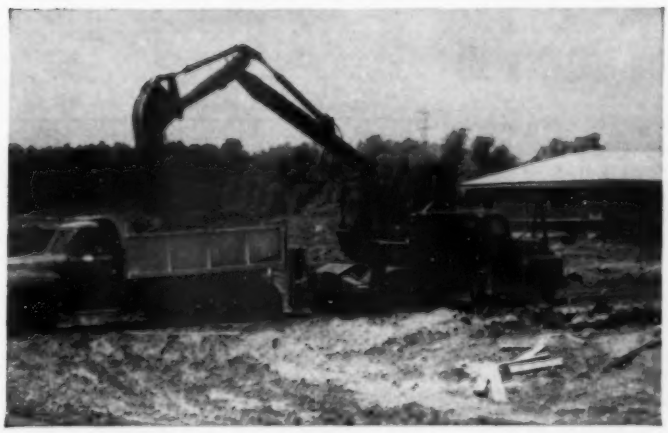
HYDROCRANE

...with a Hydrohoe attachment



and you can bet it's going to DIG because behind the teeth on that bucket is a combined total of 189,000 pounds of ram force! This machine has a combination of features that put it in a class by itself among half-yard hoes.

Here's why: The dippers for Hydrohoes, ranging from 24 to 60 inches wide, are reversible  to give you two-way digging action. Also, the dippers have hydraulic wrist action to bite in fast and hard. The boom on this hoe telescopes 4 feet to give you efficient dumping reach for every job, eliminating unnecessary move-up time.



Who uses them? Municipalities, counties, utility companies, excavating and sewer contractors. **Your Bucyrus-Erie distributor will gladly arrange a demonstration.** Call him today, or write Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept. 27H.

BUCYRUS ERIE®

Builds Better Equipment

Now better than ever...

Completely new from the ground up—backed by 10 years of rotary field experience—this all new Ingersoll-Rand Gyro-Flo 125 portable rotary compressor is based on results of extensive research, performance evaluation and customer suggestions.

Smaller and more compact than the original Gyro-Flo 125, this new unit incorporates many of the proven Gyro-Flo design features plus a host of new features that make it the best 125-cfm portable compressor available.

Some of its features are: larger engines at slower speed (1800-rpm)...60" track for greater stability on rough terrain...full-length tool boxes with more storage capacity...side covers that fold back safely away from operating eye-level...fuel and air tanks under lockable cover to guard against tampering...automatic drainage of oil from cylinders when unit is shut down...and provision for inspection of all rotor vanes. The new Gyro-Flo 125 is powered by 1800-rpm Continental engines—either gasoline or diesel. Ask your Ingersoll-Rand representative for complete details or send today for a copy of Form 2930.

DIMENSIONS AND WEIGHTS

2-WHEEL MOUNTING	GASOLINE	DIESEL
Weight (dry)	2442	2503
Weight (wet)	2647	2737
Length, incl. draw bar	10'1"	10'1"
Width	5'8¾"	5'8¾"
Height	5'1½"	5'1½"
Track	60"	60"
LESS RUNNING GEAR (INCL. SHIPPING SKID)		
Weight (dry)	2165	2226
Weight (wet)	2370	2450
Length	5'9¾"	5'9¾"
Width	2'8¼"	2'8¼"
Height	3'8¾"	3'9½"

Ingersoll-Rand
2-956
11 Broadway, New York 4, N.Y.

AN UNBEATABLE COMBINATION...GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters is all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—10th of preceding month. Example: January closes December 10th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

HEAVY EXCAVATION EQUIPMENT

Draglines—Shovels—Cranes
Drills—Trucks

15-W Bucyrus-Erie Elec. Drag, 215', 13 yd.
9-W Bucyrus-Erie Elec. Drag, 160', 11½ yd.
7400 Marion Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
625 Page Diesel Drag, 160', 9 yd.
360-M Marion Elec. Drag, 175', 8 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus-Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus-Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B Bucyrus-Erie Elec. Drag, 115', 5 yd.
3900, 3500 and 3000 Manitowoc Cranes
111-M Marion Drag, 100', 4 yd.
1601 Lima 4 yd. Shovel/Drag
1055 P&H Drag, 80', 3½ yd.
1201 Lima Dragline, 85', 3 yd.
54-B Bucyrus-Erie Drag, 80', 2½ yd.
5560 Marion 26 yard Elec. Shovel
750-B Bucyrus-Erie 20 yd. Elec. Shovel
1050-B Bucyrus-Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
151-M Marion 7 yd. Elec. Shovel
170-B Bucyrus-Erie 6½ yd. Elec. Shovel
4161 Marion 6 yd. Elec. Shovel
120-B Bucyrus-Erie 4 yd. Elec. Shovel
111-M Marion 4 yd. Standard Shovel
54-B Bucyrus-Erie 2½ yd. Standard Shovel
Large selection of smaller shovels and draglines available
Model T-750 Reich Truck-Mounted Rotary and Down-the-Hole Drill
Euclid Trucks—Rear and Bottom Dump
Truck Cranes, Dozers, Scrapers, Front End Loaders, Drills, Buckets, Attachments and other miscellaneous equipment available.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. **GLadstone 5-3658**

Used 5-W diesel walking dragline, 105' boom, 6-yd. Hendrix bucket, reported in good operating condition, price subject to purchaser's inspection $85,000, f.o.b. cars located in Southeast.

EXCAVATING ENGINEER
Box 3748
South Milwaukee, Wis.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Northwest model 80-D shovel with 2½-yd. Esco bucket, 30" treads, model 21 Murphy diesel engine, Serial #13119, price FOB White Haven, Pa. $29,000.

E. F. CRAVEN CO.
Greensboro, N.C.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Two rebuilt Caterpillar D7, 3T series, tractors with 7S dozers and #25 units. Bonded buy. Completely gone through.
Two Caterpillar D7 tractors, 3T series with 7S dozers and #25 units. Reconditioned. Ready for service.
Four Caterpillar D6 tractors, 9U series, with 6S dozers and #46 hydraulic units.
One Caterpillar RD6 tractor, 2H series. Came from township. Used very little.
One Caterpillar rebuilt D4 tractor with 4S dozer and #44 unit. Completely rebuilt. Bonded buy.
Two Allis-Chalmers HD-10 tractors with dozers. Very good tractors. Ready for service.
One TD-18 IHC tractor with cable dozer. Reconditioned. Ready for delivery. Buy and try.
One TD-9 IHC loader. Ready to go. Buy and try.
Two Caterpillar #12 motor graders, 9K series. Lot of good service left.
Two Caterpillar #112 motor graders, 3U series. One rebuilt. One reconditioned.
Three Caterpillar #212 motor graders, 9T series. Rebuilt. Reconditioned. As is. One for every need.
One Allis-Chalmers AD4 motor patrol. Reconditioned. Ready for service.
One 11-B Bucyrus-Erie Transit Crane. One rental two months. Good as new. Reduction in price due to rental.
One Hyster winch for D7 tractor. Used very little.
One #60 scraper. Used two months. Good as new. For rent or sale.
One LaPlant Choate C84 scraper. Good condition. For rent or sale.

Call or Write

MIDLAND MACHINERY CO.
Chillicothe, Mo. **St. Joseph, Mo.**
Ph. MI 6-2080 **Ph. AD 3-2516**

Bucyrus-Erie crowd shovel attachment for model 15-B ½-yd. excavator. Very good condition. U-197. $1,950.
Bucyrus-Erie 15-B ½-yd. hoe. Cat diesel D315 has electric starter. Been through our shop and in excellent condition. Has grouser type pads. U-339. $14,000.
Dragline bucket for Bucyrus-Erie 15-B ½-yd. capacity. Good condition. U-142. $300.
Hansen model 31 crawler backhoe. International UD-6 diesel engine. Has shovel and crane attachments with no extra cost. A bargain. U-32. $3,400.
Northwest crowd shovel attachment for model 25, ¾-yd. New and unused. U-198. $1,950.
Unit model 10-20 backhoe, includes crowd shovel, dragline, dragline bucket and clamshell bucket S/N 1719. Complete with extra engine and spare parts; engine overhauled. Good condition. U-249. $7,950. FOB Idaho Falls.
Link-Belt Speeder model LS-52 crowd shovel. Powered by Cat D315 diesel. Very good condition. U-276. $10,750.
Wellman 2½-yd. dragline bucket, model DXL, S/N D-1789. Has never been used. $1,200.
Call, wire or write today for information about these and our many other items of used equipment.

LANG CONSTRUCTION EQUIPMENT CO.
P. O. Box 1646 **Salt Lake City, Utah**
Phone: DAvis 2-1241 **TWX No. SU-278**

1—Bucyrus-Erie model 75-B electric powered shovel equipped with 2½-yd. manganese dipper. Supply of spare parts also available. Weight 225,000 lbs.

EXCAVATING ENGINEER
Box 3746
South Milwaukee, Wis.

SMALL SHOVELS, CRANES, DRAGLINES — UP to 2½ YDS.

1 Completely rebuilt 54-B shovel #60317. $45,000.
1 Completely rebuilt 54-B shovel #107758. $55,000.

THE W. I. CLARK CO.
Box 301 **New Haven, Conn.**

Bucyrus-Erie 15-B dragline-hoe, ½-yd.
Bucyrus-Erie 19-B dragline, ¾-yd.
Bucyrus-Erie 22-B hoe, ¾-yd.
Bucyrus-Erie 33-B dragline-hoe-shovel, 1¼-yd.
American 375 hoe and shovel, ¾-yd.
Insley K12 dragline and shovel, ½-yd.
Link-Belt LS50 hoe, ½-yd.
Pioneer 40"x22" stationary roll crusher.
Pioneer 16"x16" stationary roll crusher.
Pioneer 30" pan feeder.
Portable washing plant.
Portable conveyor 24"x30' with dozer hopper, gas engine.
Portable conveyor 30"x55' with 20 HP electric motor.
Portable conveyor 18"x50' cleated belt with gas engine.
Barber-Greene 840B asphalt plant complete with three bin feeder single aggregate 30 to 50 tons per hour low pressure burner.
Barber-Greene 840 plant with high pressure burner 125 HP, Cleaver Brooks boiler 45 to 60 ton per hour.
Barber-Greene 879A finisher.
Many other items. Call or write.

THE ZECO CO.
2929 University Ave. S.E. **FRanklin 1-7971**
Minneapolis 14, Minn.

P&H model 255-A. ¾-yd. shovel, crawler mounted, powered by Caterpillar model 315 diesel engine. #5918. $14,500, FOB Elizabethtown, Ky.
Bucyrus-Erie model 22-B heavy duty crane, dragline and clamshell, 51-20 combination. Powered by International model UD-525 diesel engine. Long and wide tracks. Like new condition. $24,500. FOB Louisville, Ky.
Unit model 1020, ¾-yd. shovel. Powered by GMC 3-71 diesel engine. #292. $5,000. FOB Elizabethtown, Ky.
Lorain model TL-20 dragline excavator, crawler mounted, with 22" wide treads, 45' boom, fairleads. Powered by Waukesha gasoline engine. #5920. $8,500. FOB Evansville, Ind.
Lorain model L41, ¾-yd. crane, dragline, clamshell combination, 40' boom, tagline and fairleads, pendant suspension. Powered by Caterpillar model 318 gasoline engine. #9810. $8,900. FOB Louisville, Ky.
Bucyrus-Erie model 10-B, 1952 model, ¾-yd. shovel, crawler mounted. Powered by Buda gasoline engine. #12815. $7,500. FOB Paducah, Ky.
Lorain model L50J, 1-yd. crane, dragline, clamshell combination. 70' boom pendant suspension, tagline and fairleads. Powered by Waukesha 140 GK gasoline engine. #686. $14,000. FOB Louisville, Ky.

Shovel & Crane Attachments

Kochring model 304 shovel front attachment, ¾-yd. capacity. Like new condition. #398. $1,900. FOB Elizabethtown, Ky.
Bucyrus-Erie model 10-B shovel front attachment, ¾-yd. capacity. Excellent condition. #551. $850. FOB Elizabethtown, Ky.
Write, wire or phone Jim Waddell

BRANDEIS MACHINERY & SUPPLY CO.
P. O. Box 1705 **Louisville, Ky.**
MElrose 7-4741

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Tractors

Caterpillar D8, 24" tracks, high output engine, elec. starter, crankcase guard, canopy top and CAT 8S hydraulic bulldozer and No. 46 hydraulic control. Reconditioned—30 day bonded guarantee. $16,500.

Caterpillar D7, 17A series, 22" tracks, crankcase guard, oil clutch, elec. starter and Cat 7S hydraulic bulldozer. Reconditioned—30 day bonded guarantee. $18,500.

Scrapers

Four Euclid S-18 tractor-scrapers, Allison 3-speed torqmatic drive with model 28 SH 21-yd. heaped scrapers, 4—27.00x33—30 ply tubeless tires. Good operating condition. $29,000 each.

Six Caterpillar DW20 tractors with Cat No. 20 scrapers. 20-yd. heaped capacity. Good operatting condition. $25,000 each.

Shovels

Northwest model 80-D, 2¼-yd. shovel with 30" tracks, 25' boom, 22'6" dipper stick, powered by a Murphy diesel engine. Reconditioned. $42,500.

Link-Belt Speeder, mod. LS85, ¾-yd. capacity 50' boom, 2 sheave boom point, 20" pads, powered by Cat D318 diesel engine. Subject to inspection. $5,500.

Attachment

Erie ½-yd. general purpose clamshell bucket with teeth. Good condition. $750.

Truck Crane

Lima Paymaster truck crane, model E34, ¾-yd., 35' boom, 6-cylinder Buda gas engine, Mack 6x6 truck carrier with 10 12.00x24 tires. As inspected. $12,000.

Subject to prior sale or other disposal.

H. O. PENN MACHINERY CO.
140th St. & East River — CYpress 2-4800
New York 54, N.Y.

Bucyrus-Erie model 15-B, serial #77267, combination backhoe and shovel with Buda gasoline engine. Good condition. $8,000.

Bucyrus-Erie model 22-B, serial #79795, combination ¾-yd. shovel and crane, 60' boom with pendant suspension, Caterpillar D318 diesel engine. Machine available as is or rebuilt.

Bucyrus-Erie Hydrohoe attachment for H-3 Hydrocrane complete with 18" general purpose dipper, 20" utility dipper and all necessary fittings. Very good condition. $1,000.

Lorain model L40, serial #15639, combination shovel and backhoe, 50' crane boom with fairlead and rudomatic tagline. Fair condition. $5,000.

Lorain model TL-25, serial #19697, combination shovel and backhoe. Machine completely rebuilt. $10,500.

Northwest model 25, serial #16381 backhoe with D318 Caterpillar diesel engine. Very good condition. $15,000.

BINDER MACHINERY CO.
Brighton Street — Union, N. J.
MUrdock 8-0060

7—P&H model 955 diesel draglines with Waukesha 6 WAKD engine, 70-ft. boom, crawler mounting 18'3" long overall, 12'8" wide overall, 42" wide treads, 5 to 7 years old, location western Pennsylvania. Inspection gladly arranged.

EXCAVATING ENGINEER
Box 3747
South Milwaukee, Wis.

MISCELLANEOUS EQUIPMENT

Portable, all steel barge-mounted dredge, 18' x 56' barge, knocks down to 4 sections, 5 drum dredge hoist, model 600 Cummins diesel on 10" AMSCO pump. G-M 4-71 diesel operates generator and high pressure water pump. 36' ladder with rotary cutter, 1,500' of 10" pipe—more available. Rebuilt and guaranteed. Financing available. $37,500. Call:

J. P. WAITE, INC.
3304 W. Pierce St. — Milwaukee, Wis.
EVergreen 4-1900

H-3 old style single-ram clamshell bucket. Good operating condition. Write

CLYDE EQUIPMENT CO.
Mr. Bill Booth
Seattle, Wash.

MISCELLANEOUS EQUIPMENT

Gardner-Denver model WHK2001 portable air compressor, serial No. 1566079, powered by Caterpillar model D13000 diesel engine, mounted on four 7:50x20 tires, with towing tongue. $6,750.

Gardner-Denver Air Trac, serial No. 1426, equipped with RMC10 chain feed, Gardner-Denver model D99J deep hole drill, air hoses, towing tongue. $7,500.

Gardner-Denver model WBK2001 portable air compressor, serial No. 130890, powered by Caterpillar model D13000 diesel engine, all mounted on International tandem axle truck. $7,500.

Gardner-Denver model D89D wagon drill, serial No. unknown, equipped with Gardner-Denver model D89D drill, complete with air hoses, line oiler, and mounted on a rubber tired trailer. $1,500.

Cummins model LI diesel engine, serial No. 55702, equipped with radiator, steel skid base, enclosed twin disc flywheel clutch, air compressor for air starting. This engine will be sold as salvage only. $3,500.

Caterpillar model D3400 diesel engine, serial No. 1T-9777, equipped with gasoline starting engine, skid mounted, radiator, safety shut off control. Does not have a clutch or fuel tank. $1,000.

Caterpillar model D17000 diesel engine, serial No. 5E-9316, complete wtih clutch, fuel tank, radiator, gasoline starting engine, outboard bearing. $1,850.

Adams model 610 diesel motor grader, serial No. 2810, powered by International model UD-16 diesel engine, equipped with cab, electric starting, 12-ft. blade, 2-ft. extension, power steering, scarifier, four wheel brakes, 14:00x24 tires front & rear. $4,950.

Austin Western model Super 99 diesel motor grader, serial No. 99SW-570, powered by GM 4-71 diesel engine, with electric starting, cab, power steering, six wheel drive and steering, hydraulic side shift, torque convertor, lights, electric windshield wiper, 12-ft. blade, scarifier. $14,500.

Case model LAI wheel type loader, serial No. 5223590, equipped with Lull shovel, ¾-yd. material bucket, electric starting, 7:00x20 front tires, 18:00x26 rear tires. $2,750.

Caterpillar model D4 60" diesel tractor serial No. 2T-8776, equipped with Ulrich model IU-39 loader with ¾-yd. 78" wide bucket, counterweight box, Caterpillar model 44 front mounted hydraulic control, 16" wide grouser tracks, crankcase guard, electric starting. $5,200.

Caterpillar model 18 pull type ripper, serial No. 6D-1351, complete with three shanks. $2,000.

R. L. HARRISON CO., INC.
P. O. Box 1320
Albuquerque, N.M.

Churn drill, serial No. 26865, model 29-T equipped for drilling 6" and 9" holes, weight of 9" drill stem—2,600—3,000 lbs., jack shaft 2 7/16".

Bit dresser, serial No. 26866, No. 12, complete with 1 ram die, 1 hammer die for 9" type "G" 500 lb. bits, 1 anvil, 1 pincap for 3¼"x4¼" 7 API joint on bit, bit turning handle, 2 bit gauges.

Above two items are located at Keigley Quarry Works near Payson, Utah.

Churn drill, serial No. 26107, model 29-T.

This drill is located at the Columbia Iron Mining Co., Desert Mound Mine near Cedar City, Utah.

EXCAVATING ENGINEER
Box 3749
South Milwaukee, Wis.

Bucyrus-Erie 54-B 70' boom & fairleads, $2,350.
38-B Bucyrus-Erie fairleads & 60' boom, $2,200.
22-B New boom $900. New fairleads $265.
Crane boom Bucyrus-Erie 15-B $650.
10-B fairleads like new, $225.
15-B backhoe attachment, $1,600.
22-B backhoe attachment, $1,750.
10-B cambered backhoe attachment, $1,000.
38-B backhoe attachment, $4,500.
51-B new backhoe attachment, $6,000.
12—House rollers new 22-B part #1Y8911, $31 each.
New 15-B shovel front, $850.
New 22-B shovel front, $1,400.
New shovel front Buckeye model 70, $850.
New shovel front K-12 Insley, $850.
New shovel front Unit 514, $850.
New shovel front TL-20 Lorain, $850.

AIR COMPRESSOR RENTAL CO., INC.
19615 Nottingham Rd. — Cleveland 10, Ohio

MISCELLANEOUS EQUIPMENT

Bucyrus-Erie 22-T well drill, fair condition.

Chicago-Pneumatic CP50 wagon drill for up to 2" holes, good condition.

Unit 514 ½-yd. gas shovel, good condition.

Pettibone-Mulliken 2½-yd. rock dipper, good condition.

WAUKESHA LIME & STONE CO.
P. O. Box 27 — Waukesha, Wis.

1—Ingersoll-Rand model DR-900 Gyro Flo air compressor with GM-6-110 diesel engine, temp. control switch, air glide cap. control, Elect. start., oil bath air intake filters, multiple leaf steel spring suspension, traffic regulators, A.S.M.E. air receiver, muffler, special fittings for State of Mass., and mounted on four pneumatic tired wheels, complete with standard equipment. Serial No. 900LR16248.

1—Ingersoll-Rand model DM3-DHD 325A Drill-Master complete with DHD-325A down the hole drill, DR-600 Gyro Flo compressor, hydraulic jacks, hydraulic dust collector, air hoist, air line lubricator, hydraulic wrench, closed operators cab with controls, 4G31 grinder & stand, all necessary tools, 50' length ½" air hose and 8 lengths BiDRT 25' drill steel.

1—Chicago Pneumatic model 900 class RO-2 two-stage oil cooled Cummins #NRT 6-VI supercharged diesel engine driven rotary portable air compressor, skid mounted, complete with standard equipment.

GILL DRILLING EQUIPMENT CO., INC.
P. O. Box 66 — Foxon Road (Rt. 80)
North Branford, Conn.

AIR TOOLS

2—Joy crawler drills, drill class CTM1. These two drills are mates, both have had only one season's use. There is a good stock of extra parts with these drills.

EXCAVATORS

1—Koehring model 304 S/N 8204, equipped as a shovel—machine is in good operating condition. Located at Casper, Wyo. branch.

1—Bucyrus-Erie 22-B combination dragline and hoe, powered with Caterpillar D318 engine. This machine will meet your approval.

1—Bucyrus-Erie 10-B powered by Hercules gas engine, equipped with hoe and shovel front—machine is priced at $3,500, as is.

ASPHALT EQUIPMENT

1—848 Barber Greene asphalt plant, equipped with feeder, bucket elevators, rotary drier, graduation unit, dust collector, pug mill, Cleaver Brooks steam boiler, GM model 4-71 engine, Caterpillar model D13000 engines, also electric motors, wiring cables and panels that make this plant complete. We welcome inspections of this plant.

TRUCKS and BOTTOM DUMPS

2—Euclid 7LD rear dumps S/N 8887 and 8888 powered with Buda diesel engines, equipped with Parkersburg Hydrotarders, Fuller 5-speed transmission. These trucks are operable. Price $5,000 per unit.

6—WD60 Koehring Dumptors S/N D-3651, D-3867, D-4202, D-4550, D-4551, D-4009, powered by General Motors diesel engines. These machines rate a very clean classification.

2—Euclid bottom dumps, 25FDT powered with Cummins engines. Tires 50% to 60% good. These tires are worth the asking price of the whole unit.

TRACTORS

1—Near new Caterpillar D9 equipped with push block, front power control unit, new rails, rollers and sprockets rebuilt. This machine was new in June of 1958.

1—International TD-24 Bucyrus-Erie double drum power control unit, straight dozer—a clean tractor priced right.

1—HD-11G Allis-Chalmers tractor shovel front end loader and model 9800 ripper. This machine carries a very good classification.

THE COLORADO BUILDERS' SUPPLY CO.
1534 Blake St.
Denver 2, Colo.

---

200 Tons of pick steels, rock drills, tractor spares 50% of list price.
MERTON ENGINEERING CO., LTD.
Feltham, Middlesex, England

MISCELLANEOUS EQUIPMENT

ENGINES

1—New unused Buda 6B273 6-cyl. 3¾ x 4½" fan to flywheel gasoline engine—serial 374583—1335 RPM no load—38.7 HP @ 1,200 RPM full load—F.O.B. Erie, Pa.

5—New unused Buda 6B230 6-cyl. 3⅞ x 4½" gasoline engines—1,325 RPM no load—29.8 HP @ 1,200 RPM full load—complete with radiator, Twin Disc power take off, electric starting and 6V battery—serial Nos. 374114, 374640, 374641, 375110 and 375112—F.O.B. Erie, Pa.

1—New unused Waukesha ICK 4-cyl. 2½ x 3¼" gasoline starting engine—61 cu. in. displacement—serial 1029495—F.O.B. South Milwaukee, Wis.

1—Slightly used (about 200 hrs.) Continental ED-201 4-cyl. 3⅜ x 4⅞" diesel engine—naturally aspired—1,700 RPM no load—35.4 HP @ 1,600 RPM full load—complete with radiator, power take off, electric starter, chain sprocket & misc. control equipment—F.O.B. Evansville, Ind.

1—New unused IHC U-1 4-cyl. 2⅝ x 2¾" gasoline power unit—fully enclosed—16.8 HP @ 2,500 RPM full load—59.5 cu. in. displacement—SAE #5 flywheel housing—less PTO—F.O.B. South Milwaukee, Wis.

1—Rebuilt IHC U-1 4-cyl. 2⅝ x 2¾" (same as above)—never operated after rebuilt—F.O.B. South Milwaukee, Wis.

1—Used Cummins LRI-600 6-cyl. 7¼ x 10" diesel engine—serial 89420—good condition—suitable for 88B—F.O.B. San Francisco, Calif.

Above engines offered "as is", F.O.B. the indicated locations, subject to withdrawal or prior disposition. Will sacrifice for quick sale.

J. E. Smart
BUCYRUS-ERIE CO.
South Milwaukee, Wis.
Phone: SOuth 2-0900

1—2-cu. yd. type TS Hendrix medium-duty dragline bucket complete with all fittings. Weight—3,550 pounds. Reduced price—$1,500. F.O.B. Evansville, Ind.

BUCYRUS-ERIE CO.
South Milwaukee, Wis.

3—⅛-cu. yd. type AX medium-duty dragline buckets. Complete with all fittings. Weight—950 lbs. ea. Reduced price—$620 ea. F.O.B. Evansville, Ind.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wis.

3—29-T Bucyrus-Erie wire line blast hole drills.

2—42-T Bucyrus-Erie wire line blast hole drills.

1—Traylor model TZ gyratory crusher.

1—Model 80 diesel powered Haiss loader.

1—D6 bulldozer.

3—New 12:00x20, 14-ply General tires.

2—New 16:00x24 General LCM Nygen tires.

1—Lima crane, serial No. 431, type 701, with 52-ft. boom—plus a 10-ft. and 15-ft. section.

1—Sea Mule, powered by two (2) Chrysler-Royal Marine type, 8-cylinder engines.

NEW YORK TRAP ROCK CORP.
Old Mill Road
West Nyack, N. Y.
NYack 7-4500

SHOVELS

Lima 20-ton crane, mounted on Wilmott Carrier Unit, powered with GMC 4-71 diesel engine. Tires good. General operating condition good. Price on application, f.o.b. Missoula, Mont.

Northwest No. 70 with shovel front and dragline, 60-ft. boom. Price on application, f.o.b. Missoula, Mont.

Bucyrus-Erie 71-B shovel, serial 114452, 3-yd. bucket. GMC 6-10 engine, serial No. 6V8765 with Clark Torcon 8-17K torque converter. 42" tracks. Kohler light plant. Tracks and running gear 60% or better, upper works 70%. General running condition excellent. Engine completely overhauled in 1958 and torque converter and clutch also overhauled in 1958. Hour meter reading 6,405 hours. Price on application.

Bucyrus-Erie 38-B shovel, serial 108729 powered with Caterpillar D13000 diesel engine. Machine in excellent condition. Has had very good care. Price on application.

COMPRESSORS

Ingersoll-Rand 315 Gyroflow rotary air compressor, powered with GMC 3-71 diesel engine. Appearance of new machine. Excellent condition. Price on application.

Gardner-Denver 105 air compressors. Portable. Excellent condition. Price on application.

Gardner-Denver 315 compressor. Skid-mounted. Powered with Caterpillar D8800 diesel engine. Good condition. Price on application.

Gardner-Denver UMB drill wagon with Gardner-Denver D89D 3½" hammer, serial no. 177635, 4-ft. power feed, chuck 1⅝" round, lug shank steel. Excellent condition. Price on application.

CRUSHING EQUIPMENT & PLANTS

Pioneer 46VE crushing plant, all electric. Caterpillar D13000 engine. Good condition. Caterpillar D13000 diesel electric set. Good condition. 10x36 jaw crusher, 40x22 roll, screens, both conveyor belts new. Tires good. 30"x50' delivery conveyor, 30"x50' feeder conveyor. Both with Schrock head pulleys. Belts 50% good. 21-yd. jack leg bin. 30"x7' feeder. Excellent condition. Price on application.

Pioneer apron feeder. 6'x30" type A, two-chain with flared side boards. Appears like new. Good operating condition. Very little use. Price on application.

Pioneer 3'x10' 2-deck, 4-bearing Vibrator screen, equipped with 2" sq. op. Top deck ½" wire, ¼" sq. op. No. 9 wire bottom deck. Motor mount. Also extra set of screens. Not used over 3 or 4 months. Like new condition. Price on application.

Pioneer apron feeder, No. AM36231, 36"x8'. Pan ends need replacing; otherwise in good operation condition. Price on application.

ASPHALT EQUIPMENT

Barber-Greene model 82A heavy-duty paving load with floating cleanup scraper. 14"x6'5" crawlers, multiple speed transmission. Dust housing 9'7" pickup notched spirals, 72 HP UD9A International diesel engine. Heavy drive to elevator starter. 26 gallon fuel tank. Machine serial No. 82-2753, engine serial No. UDCB-25994BG20. Price on application.

Barber-Greene model 84A heavy-duty mixer, with 8' steam jacketed twin shaft pugmill. Aggregate hopper. Apron feeder. 750x20 pneumatic tires on front axle, 1200x20 14-ply pneumatic tires and airbrakes on rear axle. 700 gallon insulated bitumen tank. Distillate burner, 3" Kinney metering pump. Necessary hood connections for loader. Discharge chute. 3" Viking transfer pump. 145 HP UD18A International diesel engine with starter. Good condition. Price on application.

TRACTORS

Caterpillar D9 tractor, 18A series. Angle-dozer and No. 29 cable control. Excellent condition. Price on application.

4—Caterpillar D8 tractors, 14A series. Angle-dozers, and rear mounted No. 29 cable controls. Good condition. Price on application.

Allis-Chalmers HD-21A tractor, low hours, good operating condition. Price on application.

Allis-Chalmers HD-20 tractor with blade and rear mounted Caterpillar No. 25 cable control. Clearance price on application.

Caterpillar 8A bulldozers, completely rebuilt—prices on application.

Caterpillar No. 25 cable controls, rebuilt—price on application.

Allis-Chalmers HD-6G shovel-loaders, 2-years old, 1½-yd. buckets. Low hours. Excellent condition. Price on application.

GOLD MINING EQUIPMENT

Yuba 2-cell model M8 jig. 42x42 cells. Complete with baskets, grids, stainless steel screens. Sells new $2,707. Not used over three months. Special clearance price on application.

Washing plants, dragline equipment, pumps, and other misc. equipment for mining operations available. Prices on application.

WESTMONT TRACTOR CO.
Box 1445 **150 E. Spruce St.**
Missoula, Mont.

1—Michigan C-16 ½-yd. hoe, ½-yd. 22" bucket, 9'9" crawlers, 20" wide, Hercules gas engine JXD #1742230, machine #3797, 4 years old.

1—Koehring 303 ¾-yd. hoe, 30" bucket, 10'6" crawlers, 24" wide, Waukesha gas engine #484150, 4¾"x5¼", serial #2337.

1—Osgood 200 ½-yd. hoe with 22" bucket, 11' crawlers, 22" wide, powered by Continental gas engine, machine #6285, 5 years old.

1—Lorain model TL-20 hoe with Waukesha gas engine, six years old, good condition.

1—Bucyrus-Erie 15-B positive crowd shovel, 15'6" boom, 12'6" handle, ½-yd. cast iron dipper including dragline and clamshell equipment consisting of 30' boom, complete dragline equipment, also tagline equipment with rope, closing and lowering ropes, drum lagging, no clamshell bucket or drag bucket included. Fully enclosed steel cab, independent power boom hoist, 20" wide treads, Buda 6-cylinder 3⅛"x 4¼" HP-326 gasoline engine with electric starter. 2,900# cast iron ballast, serial #51572.

1—Bucyrus-Erie 22-B ¾-yd. hoe, s/n 67118, powered by GMC 3-71 diesel engine, standard cats, machine in good condition.

1—Bucyrus-Erie 15-B hoe attachment with ½-yd. bucket 34" wide with side cutters straight boom—like new.

1—Bucyrus-Erie 15-B ½-yd. shovel attachment—perfect.

1—Worthington 16-S concrete mixer on four pneumatic tires with power skip and water tank, serial #5548 powered by Wisconsin VF-4 gas engine, 4 years old.

1—International TD-14 crawler loader model 14K3 with Drott skid shovel, 2½-yd. serial #B-2463, only 1½-years old, excellent shape, 1,500 hours.

1—Wiley PM215 Patchmobile portable asphalt patching unit on two pneumatic tires, complete with rotary dryer. This unit is new.

1—Ruhr M-1 ½-yd. heavy duty grapple, new, excellent buy.

1—Wayne 36" rider industrial vacuum pickup power sweeper, demonstrator, 2 years old.

1—LeRoi 315 air compressor on 4 pneumatic tires, 7 or 8 years old.

2—CMC Jetcretes with all accessories. Excellent condition, practically new with all extra accessories.

1—Baker 3,300 gallon tank trailer, single axle.

1—Ross 6-ton pneumatic tired fork lift truck, 10' mast, 14' lift.

1—Used Kennedy Van-Saun revolving scrubber washer screen, 48" dia. x 21'0" long, in excellent shape and complete with all new parts including extra scrubber sections and new sizing screens.

S. M. CHRISTHILF & SON, INC.
Timonium Road & Harrisburg Expressway
Timonium, Md.

Mayhew rotary air drill complete with Mayhew split shaft power take-off for powering drill unit from truck engine, enclosed chain driven power transfer case, three-speed transmission on rotary table drive, model 2003 rotary table, power-flo chain pulldown with 1½" pitch chains, double drum draw works with two CL-311 friction clutches, 31" mast raised and lowered with two hydraulic cylinders, hydraulic oil storage tank with strainer, Vickers oil pump, Vickers control valve, swivel and kelly head assembly (28,000 lb. capacity), 3¼"x23' fluted kelly bar, kelly head adapter, kelly adapter to drill pipe, kelly drive bushing, 2" pressure hose and standpipe to swivel, all cables, hoist plug, break out blocks (slips), model WCG Gardner-Denver compressor with air receiver, gage and pop-off valve, tachometer at rear of drill, 618 breakout wrench, clearance lights with conduit and reflectors installed on drill bed, drilling lights installed, unit primed and painted and mounted on Euclid model 27FD 2751 with HR Cummins diesel engine. Brake lock system installed. Price $15,000.

L. G. EVERIST, INC.
307 Poulton Bldg.
Sioux Falls, S. D.

MISCELLANEOUS EQUIPMENT

Crushers

Cedar Rapids 18x36 variable twin jaw crusher mounted on semi-trailer with fifth wheel pin and 8—9:00x20 tires. Overall dimension, 41'x 8' wide & 12' high. 4'x10' vibrating type scalping screen. 27' long x 30" belt discharge conveyor. IH UD-24 power unit is skid mounted and has outboard bearing. Overall condition is very good. U-389.

Ditchers

Cleveland wheel ditcher, "Baby Digger." S/N 306. Powered by Hercules gas engine. Has 4½-ft. digging depth. Good working condition. U-1 $1,450.

Parsons model 88 trench liner has 7" paddles on chains, 14" paddles on extra chain. Gas engine. Good condition. FOB Idaho Falls, Idaho. U373. $6,250.

Barber-Greene model 702 trenches with 5" cutting bits. Wisconsin gas engine. U-372. Bargain price $3,750.

Asphalt Pavers

Adnun blacktop paver, S/N 1462. Has been repaired and is in good operating condition. U-5 $1,400.

Barber-Greene model 879-A asphalt finisher, S/N 49-67. Powered by LeRoi gas engine. Has been completely rebuilt & is in excellent condition. U-70. $9,200.

Scraper

Be-Ge ST-770 hydraulic scraper, 6-yds. struck capacity. Excellent condition. U-246. $2,975.

Graders

Austin-Western model 99 motor grader. Has scarifier and snow plow. IH UD-16 diesel engine. Good condition. U-354. FOB Idaho Falls, Idaho. $4,500.

Caterpillar 12 motor grader, S/N 8T3192. Cab, 6-tooth scarifier, front-mount "V" plow, and a snow-wing with blower and motor. Good condition. U-419.

Galion model 101 motor grader. Hydraulic steering. IH UD-14 diesel engine. Good condition. U-29. $3,950.

Off-Highway Truck

Euclid model 8LD rear dump truck, S/N 8956. 19-yd. water-level HD rock body. Cummins supercharged HBS 6-cylinder diesel engine. Fuller transmission. Motor is rebuilt and like new. General condition is good. Very reasonable price.

Fruehauf trailer (remodeled army surplus) good condition. U-28 $1,250.

Belt conveyor, 85-ft. long by 20". Made of 5" channel with 12" head and tail pulley. 15 troughing rollers, 6 return idlers and belt idler. Good condition. U-390—low price.

Carco model "J" logging winch. 1955 model, good as new. U-65. Only $2,100.

Joy heavy weight class 58-BH 7⅛" blast hole drill, 1951 model. Bargain price. Inquire for further details.

Superior pipe tongs as good as new. U-176. $99.50.

Seaman-Andwell model DTM 47 Trav-L-Plant. Self propelled. Pump assembly, spraybar, volumetric meter, relief and shut-off valve, 2-speed rotor and power steering. Main power is GMC 4057C diesel engine. Subassembly engine is Wisconsin V64D. Has never been used. A bargain price. U409.

Call, wire, or write today for information about these and our many other items of used equipment.

LANG CONSTRUCTION EQUIPMENT CO.
P. O. Box 1646 **Salt Lake City, Utah**
Phone: DAvis 2-1241 **TWX No. SU-278**

DRAGLINE EQUIPMENT

Bucyrus-Erie 70'0" dragline equipment for 54-B (like new condition) including fairlead, lagging, high A frame and 10,000 pounds counterweight, less ropes or bucket. Will sell at sacrifice.

OSAGE COAL CO.
Mr. Joe Lake, Sup't
Steamboat Springs, Colo.

Euclid model 27FD, 15-ton rear dump, powered by Cummins diesel engine. Engine overhauled. Good tires. Good operating condition. S/N/D-6205. $12,500, FOB Elizabethtown, Ky.

Euclid model 5FD, 15-ton rear dump powered by Cummins diesel engine. Excellent tires—75% good. Engine in excellent condition. S/N 51104. $9,000, FOB Elizabethtown, Ky.

Write, wire or phone Jim Waddell

BRANDEIS MACHINERY & SUPPLY CO.
P. O. Box 1705 **Louisville, Ky.**
MElrose 7-4741

Notes from the Manufacturers

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed Charles B. Brockmeyer as sales engineer for dragline buckets and dippers, and Frank T. House as sales development manager. Both men are stationed at the company's home office. Brockmeyer has been in B-E's parts division since 1945. Most recently, he was a supervisor in the division's order section. House joined Bucyrus-Erie in 1955 and was assigned to a regional sales office at Atlanta, Ga.

Curtiss-Wright Corp., South Bend Div., South Bend, Ind., has named John P. Sheehan as New England district sales manager. Sheehan's territory will include Connecticut, Rhode Island, Massachusetts, Maine, Vermont and New Hampshire. The South Bend Division manufactures Curtiss-Wright's line of self-propelled and tractor-drawn scrapers ranging from 10 to 39 cubic yards, and rear dump models in sizes up to 35 tons.

Koehring Co., Milwaukee, Wis., has acquired the complete business of the Shawnee Manufacturing Co., Inc., of Topeka, Kan. Shawnee manufactures backhoes, loaders, brooms, scrapers, rear blades and other attachments for wheel-type utility tractors. Shawnee products have a wide range of application for construction, reclamation, utilities and farming. Shawnee will operate as part of Koehring's Parsons Division, of Newton, Iowa, which manufactures trench digging equipment.

Hughes Tool Co., Houston, Tex., has organized an industrial sales section to develop sales of Hughes rock bits in the construction field. The move is part of an aggressive diversification program to increase sales in the fields of mine and quarry blast hole drilling, water well drilling, construction, and similar operations utilizing rock bit cutting structures similar to those used on the rotary rock bit. Leon B. Stinson, a 21-year veteran with the company, has been named manager of the industrial sales section. Assistant to Stinson is Roy M. Goolsbay, who has been a sales representative since 1947. Stinson has specialized in sales to open pit mine, quarry and construction blast hole drilling, and in seismograph shot-hole drilling operations. Both Stinson and Goolsbay will continue to maintain headquarters in Houston.

Marion Power Shovel Co., Marion, Ohio, has appointed six new distributors in various sections of the country. They are: Fletcher Equipment & Supplies, Inc., New Orleans and Baton Rouge, representing Marion in Louisiana and part of Mississippi; Southern Machinery & Supply Co., Roanoke, for the western half of Virginia; Cole-Kelly Equipment Co., Richmond, for the eastern half of Virginia; Contractors Service & Rentals, Inc., Charlotte, for North Carolina; Heiner Equipment & Supply Co., Salt Lake City, for the state of Utah and part of Idaho; and Krauser Equipment Co., Inc., Arlington, Va., covering the Washington, D.C. area. The new distributors will handle the firm's small machine line from the ¾ yd. through the 4-yd. models.

Jacob Press' Sons, Inc., Chicago, Ill., is celebrating its 100th year. Henerich Jacob Press, I, who came to Chicago in 1854 as an immigrant from Germany, formed the firm in 1859, in partnership with his brother-in-law, under the name of Kuhl and Press. In 1869 the firm became known as Jacob Press. It was located at Halsted and Fulton streets and employed 10 men. In 1895 the firm's founder died and active control was taken over by his two sons, J. H. Press, II, and W. A. Press. The name of the firm then changed to Jacob Press' Sons. In the early 1900's the company became pioneers in the construction of some of the first automobile bodies. As early as 1911, the company built semi-trailers and semi-dump trailers. Today the company produces trailer dump bodies, stake bodies, sliding fifth wheels and numerous types of other bodies. The company is run by the five sons of Jacob Press, II. Jacob H. is president; Richard B., vice president; Robert M., secretary-treasurer; and Clayton M. and Norman I. are in charge of sales.

H&L

Teeth that really dig

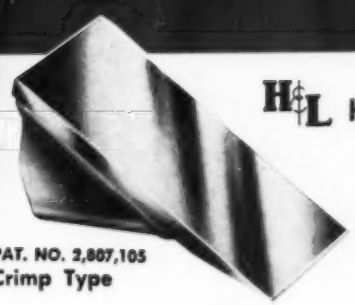
Wearplate Adapter with Point Attached!

A winning Combination

For all shovels . . . 2½ yard and larger. Change the wearplate, and you have an adapter in new condition. Wearplate, like tooth, is held in place with flexpin connection . . . simply changed with hammer and punch.

FORGED HIGH ALLOY STEEL

FOR LASTING SERVICE



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Crimp Type

H&L has a point for every make and model of excavating and digging equipment.

SEE YOUR H&L DEALER or write:

H&L TOOTH COMPANY
1540 SOUTH GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

SPECIALIZING IN TWO PART TEETH FOR OVER 28 YEARS

YOU'RE AHEAD

because the specialized experience of two pioneer companies in front-end loaders is now combined . . .

ALLIS-CHALMERS
—pioneer of the world's first successful hydraulically-controlled crawler-mounted tractor shovel.

result of 14 years' leadership

TRACTOMOTIVE
—one of the first to develop heavy-duty rubber-tired loaders.

result of 11 years' leadership

Now Tractomotive Corporation has become part of Allis-Chalmers . . . and that means we'll be able to serve you better than ever. One very important reason is that the specialized experience of each organization in its field cannot be surpassed.

Allis-Chalmers pioneered its history-making HD-5G in 1945 . . . has led the field in crawler shovel design and performance ever since . . . now offers the most complete line of such equipment in the industry, with bucket sizes from 1½ to 7¼ cu yd.

The Tractomotive team has been building heavy-duty wheel loaders since 1948 . . . has consistently pioneered developments of great value to users, including torque converter drive and single-lever shifting control.

Through the combined facilities of these two pioneers, we offer you industry's most complete line of front-end loaders, on rubber or tracks . . . with these added basic advantages to back it up!

- another modern plant joins Allis-Chalmers' extensive facilities for manufacturing construction machinery
- a company-wide record of engineering leadership in all types of heavy-duty equipment
- widespread research activity that insures continuing progress
- original factory parts and blue-chip parts control
- increased man power in sales and service

See 'em at work—your Allis-Chalmers dealer will be glad to demonstrate the machine of your choice—wheel or track-mounted, whichever meets your job needs best. Just give him a call. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

YOU'RE AHEAD with a TRACTOLOADER

...a complete line now built and backed by Allis-Chalmers

Seven models—34 to 130 hp—up to 9,000-lb carry capacity. Torque converter drive in every model.

move ahead with ALLIS-CHALMERS

...power for a growing world